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TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1902.

PART I.

BOSTON:
PRINTED FOR THE SOCIETY,
1902.

☞ SEE LAST PAGE OF COVER.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1902.

PART I.

BOSTON:
PRINTED FOR THE SOCIETY,
1902.

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The following lectures have been circulated to some extent in the form of slips reprinted from the reports made by the Secretary of the Society in the "Boston Evening Transcript." As here presented, the lectures are, as far as possible, printed in full, and reports of the discussions following the lectures are added, these, where it appeared necessary, having been carefully revised by the speakers.

The Committee on Lectures and Publication take this opportunity to repeat what they have before stated, that the Society is not to be held responsible for the certainty of the statements, the correctness of the opinions, or the accuracy of the nomenclature, in the lectures and discussions now or heretofore published, all of which must rest on the credit or judgment of the respective writers or speakers, the Society undertaking only to present these papers and discussions, or the substance of them, correctly.

AARON LOW,
J. H. BOWDITCH,
E. W. WOOD,
Committee on Lectures and Publication.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, January 4, 1902.

A duly notified stated meeting of the Society was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

This being the commencement of the term of office of the new board of Officers and Standing Committees, the President delivered his annual address as follows:

Ladies and Gentlemen,

Members of the Massachusetts Horticultural Society:

It is assigned to me by your very complimentary vote at the annual meeting, and by usual custom at the first meeting of the new year, to open with a few remarks. To me it is a pleasure to perform any duty that may tend to enable the members of the Society to act in greater unity and concert, that the present and past usefulness and future welfare of the Society may continue, in its legitimate purpose, to carry forward and adhere to the original Act of Incorporation for the "purpose of encouraging and improving the science and practice of horticulture and promoting the amelioration of the various species of trees, plants, fruits, and vegetables." The Society with its long life and energies has

moved this great Commonwealth with the spirit of enterprise that we now enjoy in horticultural pursuits, and, by the addition of the great productive industry so well established, and yearly increasing, which affords sustenance and good homes to a vast number of people within this Commonwealth.

The first Saturday in January is the time fixed by the By-Laws when the newly elected officers enter upon their official duties, when the Treasurer's report of the receipts and expenditures of the Society and the Schedule of Prizes for the ensuing year are in order to be acted upon.

We are assembled here today in this new and substantial edifice, it being the third building erected by the Society for its exhibition halls and library. The Society, with its seventy-two years of active life, eminent in its calling, now approaches the most important epoch in its history. The ensuing year will demonstrate, may we hope, the success of the removal from the business portion to the residential section of the city, a change that requires very considerable adaptability and a persistent purpose to carry forward with the utmost energy the objects of the Society so fundamental to its life and prosperity. Our main object should be a strong unanimity, not only to adapt ourselves to our situation, but a determination to overcome all prejudice that may exist, and work with a will to reinstate the good old prosperous years we enjoyed in the spot that many left with feelings of deep regret. The year just closed has, therefore, been to many members one of considerable anxiety.

The completion of this building so late in the year made necessary the postponement of the summer exhibitions, but the first flower show held in this building on June 3d to 9th proved a marvel of beauty and a success, and the halls proved their complete adaptation for the exhibition of plants of very large size that no other hall could possibly accommodate; it also proved undoubtedly the most elaborate of its kind ever brought together in this country.

The second exhibition held in this building, on November 7th to 10th, when prizes were awarded for fruits, flowers and vegetables, proved a marked success; it brought out in the greatest profusion, the richest treasures of the greenhouses, gardens and orchards, and all the available room seemed to be occupied, and

the arrangement was wonderfully pleasing in every feature; it was a well deserved credit to the committee having it in charge.

Both of these exhibitions were generously patronized and appreciated by the public, and left a substantial sum above expenses incurred. These displays also demonstrated that the public will sustain large exhibitions of the Society and will also encourage and patronize the Sunday exhibitions. Is there anything more worthy than the rich treasures of the fields and gardens?

The Committee on School Gardens and Children's Herbariums in December held an exhibition in the Lecture Hall, which proved one of the best ever held under the auspices of this Society and well deserved the encouragement it received. Here much intelligence and taste was abundantly manifest in the preservation of flowers and plants, both wild and cultivated, which were perfectly arranged.

In conclusion, for I must be brief in view of the business of the meeting, permit me to remind you of your duties for the ensuing year and to urge you to use your best efforts to sustain the Society. Your Committees will recommend no reduction in the amount of premiums. We are surrounded with new conditions that none can accurately foresee; the year will be one of experiment and experience, and let us resolve that no effort shall be spared to render the exhibitions and the general prosperity of the Society superior to those of the years that have preceded us.

Ladies and Gentlemen, tendering you my thanks, in behalf of the Society, I offer the congratulations of the season.

The Executive Committee reported a recommendation that the Society make the following appropriations for the year 1902:

For Prizes and Gratuities for the year 1902,

For Plants	$2,000.00
For Flowers	2,500.00
For Fruits	1,700.00
For Vegetables	1,200.00
For Gardens	500.00
For Native Plants	175.00
Total	$8,075.00

For the Committee on School Gardens and Children's Herbariums, for Prizes	$125.00
For the same Committee for Incidental Expenses .	75.00
For the Library Committee, this sum to include the income of the French and Farlow Funds . .	700.00
For the Committee of Arrangements, this sum to include all extraordinary expenses of said Committee	300.00
For the Committee on Forestry and Roadside Improvement	150.00
For the Committee on Lectures and Publication, this sum to include the income of $50 from the John Lewis Russell Fund	250.00
For the Salaries of the Treasurer and Superintendent of the Building, and the Secretary and Librarian. .	3,000.00

These appropriations are the same as for last year, and they were unanimously voted.

The Executive Committee also reported the appointment of Charles E. Richardson as Treasurer and Superintendent of the Building, and Robert Manning as Secretary and Librarian for the year 1902.

The Report of the Committee on Forestry and Roadside Improvement, and the Report of the Committee on Native Plants were read by the Secretary and severally referred to the Committee on Lectures and Publication.

(AA. *See statement, page 10.*)

The Annual Report of the Committee on Lectures and Publication was read by Hon. Aaron Low, Chairman.

On motion of Francis H. Appleton it was

Voted, That the reading of the reports of Committees be dispensed with, and that said reports be referred to the Committee on Lectures and Publication.

Patrick Norton presented his report as Chairman of the Committee on Gardens.

Joseph H. Woodford presented his report as Chairman of the Committee of Arrangements.

Henry L. Clapp presented his report as Chairman of the Committee on School Gardens and Children's Herbariums.

These reports were severally accepted and referred to the Committee on Lectures and Publication.

A motion that the report of the Building Committee, giving a detailed statement of the cost of the new building, be read, was defeated.

On motion of George D. Moore, it was

Voted, That an itemized statement of the cost of the new building be prepared by the Building Committee and sent to every member of the Society.

A printed copy of a proposed new Constitution and By-Laws was offered and read by Richard M. Saltonstall. After a second reading by Francis H. Appleton, and after it had been voted to change the word "shall" to "may" in the sixth line of Section XIII, and the words "a majority" to "two-thirds" in the next to the last line of Section XVI, the proposed Constitution and By-Laws were approved by a majority vote and ordered to be entered upon the records for consideration at the Stated Meeting on the first Saturday in April.

Vice-President Benjamin P. Ware was now called to the chair and it was, upon motion of J. Woodward Manning,

Voted, That the President of the Massachusetts Horticultural Society be a Committee of one to serve on the General Reception Committee for the Sixth Annual Meeting of the American Park and Outdoor Art Association, to be held in Boston, in August, 1902.

Voted, That $100 (one hundred dollars) be appropriated by the Massachusetts Horticultural Society toward a fund to be placed at the disposal of the General Reception Committee of the American Park and Outdoor Art Association.

In regard to the disposal of the statues of Ceres, Flora and Pomona, which had adorned the old Horticultural Hall, on Tremont Street, it was

Voted, That a committee be appointed to confer with the donors of the statues and the City of Boston in reference to their disposal by the Society. President O. B. Hadwen, William C. Strong and William H. Spooner were appointed as that Committee.

The following named persons, having been recommended by the Executive Committee for membership in the Society, were on ballot duly elected :—

FRANCIS R. BANGS, of Boston.
GEORGE E. CABOT, of Boston.
ARTHUR DEHON HILL, of Boston.
EDMUND REARDON, of Cambridgeport.

The meeting was then dissolved.

STATEMENT.

The records of the Stated Meeting, held Saturday, January 4, 1902, were not completed by Mr. Robert Manning, late Secretary of the Society, before his death, which occurred February 17th. From the line in such records marked AA they were prepared by Mr. Nathaniel T. Kidder, who was appointed Secretary *pro tem* March 1st, from memoranda left by Mr. Manning, from written copies of motions found among his papers, and from personal recollection.

MASSACHUSETTS HORTICULTURAL SOCIETY.

At a meeting of the Society on Saturday, November 2, 1901, it was voted that the Building Committee be requested to furnish a detailed statement of the cost of the new building. The following statement was received in reply to this request and at a meeting held January 4, 1902, it was voted that a copy be sent to every member of the Society.

STATEMENT OF COST OF NEW MASSACHUSETTS HORTICULTURAL SOCIETY BUILDING.

C. A. Dodge & Co.,	General Contract,	$238,219 62
John Evans & Co.,	Carving,	5,976 00
W. A. Snow & Co.,	Musician's balcony,	227 00
G. M. Angier,	Electric wiring,	2,721 22
A. A. Sanborn,	Heating and ventilating,	14,257 50
C. E. Horn,	Elevator,	445 00
Pierce & Cox,	Plumbing,	4,051 41
Murdock Parlor Grate Co.,	Bronze letters,	275 00
Vermont Marble Co.,	Marble for library,	65 00
L. M. Ham & Co.,	Sidewalk lights, etc., alley,	286 00
T. F. McGann,	Exterior iron balconies,	985 00
Bowker, Torrey & Co.,	Marble,	116 85
B. D. Ireland & Co.,	Electric light fixtures,	1,676 03
Elektron Manufacturing Co.,	Dumb waiter,	950 00
Walworth Manufacturing Co.,	Pipe,	5 79
Kearns & Co.,	Monolith floor, kitchen,	150 00
Duparquet, Huot and Moneuse Co.,	Kitchen furnishings,	555 50
B. Guastavino,	Arch over ticket office, etc.,	188 09
Enoch Robinson,	Brass rails, ticket office,	89 97
Taylor, Carr & Andrews,	Granolithic work, alley,	440 00
O. P. Hastings,	Shades,	115 47
Boston Electric Light Co.,	Service,	136 57
Metropolitan Coal Co.,	Coal,	699 84
John F. Berrigan,	Two tide valves,	201 49
Incandescent Electric Light Ma. Co.,	Manipulator for electric lights,	24 34
Thomas Parker & Co.,	Use of Salamanders,	67 75
B. F. Smith & Brother,	Testing for foundations,	302 75
Rockwell & Churchill,	Printing specifications,	49 50
Aspinwall & Lincoln,	Surveying,	35 00
W. L. Kimball,	Salary as Supt. of Construction,	2,020 50
Traveling Expenses,		437 74
Extra Blueprints for estimating,		79 49
Fireman's salary,		589 32
French & Hubbard,	Heating and elec. engineers,	904 40
Incidentals,		5 90
Wheelwright & Haven,	Architects,	13,646 32
		$290,997 36

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 11, 1902.

A meeting for Lecture and Discussion was holden * today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE BROWN-TAIL MOTH IN MASSACHUSETTS.

BY A. H. KIRKLAND, M. S., Boston.

Some of the most difficult problems in the economic entomology of the present day result from the importation of foreign insect pests. The San José scale, elm leaf beetle and gypsy moth are illustrations only too familiar. Such pests usually arrive unattended by the parasites or other natural enemies which control their increase in their native region, and in a new environment cause severe and widespread injury. The advantages offered by Massachusetts as a place of residence must be well understood by the insect fauna of other lands, for this Commonwealth certainly has received her a full quota of foreign insect visitors. To the ever lengthening list there has been added recently the brown-tail moth, a pest of the first magnitude at home. Apparently it is determined to maintain its reputation here if we are to judge by its serious depredations last summer in the Metropolitan district.

It is indeed a strange fatality that another European insect, closely related to the gypsy moth by habit and structure, should become accidentally imported into the same locality to which thirty years before a misguided scientist brought the gypsy moth. It would seem that the world is large enough to give each of these pests a separate "sphere of influence." That they were both transported across the Atlantic to the same locality by totally dissimilar agencies must stand as one of the remarkable entomological events of the century just closed. However, the pest is with us and in tremendous numbers. In five years' time it has spread from Somerville to Scituate, Brockton, Hudson and even to Kittery, Me. Knowing the habits of the moth it is fair to assume

* At Chickering Hall.

that a large part of the region lying between these points and the sea is generally infested.

The parent brown-tail moth is a beautiful, snow-white moth with a conspicuous brown tail, hence the common name. The moths expand some one and one-half inches and are on the wing throughout the month of July. They are sluggish and inactive by night and are strongly attracted by lights. That good old scientist Réaumur writes, "I have never seen the moth use them (the wings) in flight nor even try to do so," a statement which testifies to the good hours kept by this early student of insects if not to the unfailing accuracy of his observations. The eggs are neatly packed in a yellow hair-covered mass on the under surface of the leaves of pear and other food plants and hatch in about three weeks. The height of the flying and laying season falls around the 15th of July and by the first week in September the majority of the eggs have hatched.

The young larvæ feed at first on the epidermis of the leaf to which the eggs were attached, then draw down other leaves eventually covering them with a tough, silken envelop. In this way with a few leaves as a basis, the compact, silken winter webs are formed and securely attached to the twigs. The larvæ sally out by day to feed, returning to the web at nightfall, and on the approach of cold weather close the openings of the webs and hibernate in the silken chambers inside. The writer once counted the inmates of eighteen of these webs taken at random and found they contained from forty-seven to six hundred and seventy-four larvæ, with an average of two hundred and seventy-seven. Seven female moths carefully dissected contained from one hundred and forty-five to three hundred and forty-four eggs each, with an average of two hundred and fifty-one. These figures are suggestive as bearing on the possible rate of increase of the moth.

Within these silken shelters the tiny caterpillars rest secure throughout the vicissitudes of our New England winters. Réaumur noticed that they were not affected by a temperature of 11° Fh., while they passed unharmed through what Köllar euphemistically calls "the frost on the 2nd of February, 1830," when the mercury fell to 60° below zero Fh.

The return of warm weather causing the buds to swell brings forth the caterpillars with appetites in proportion to the length of

their fast. At this time these insects have a great advantage over some of our native fruit tree pests. Tent caterpillars or canker worms, for example, hatch in the spring and their growth, at least for a time, does not keep pace with the development of the foliage. The brown-tail moth larvæ, on the contrary, come forth partly grown and with the experience of weeks of foraging the previous fall. They consume buds, blossoms and leaves in turn, and where extra abundant will keep down every sign of leafage until the middle or last of June, when they spin up in masses on the sides of buildings, along fences and even in the foliage of trees. Within the cocoons the caterpillars soon change to pupæ from which in due season the moths emerge.

In Europe this insect is an old offender. It is found from southern Sweden to Algiers and from Portugal to the Himalayas, but it is from France and Germany that we obtain best accounts of its injury to orchards and forests. Thus in the early part of the sixteenth century Choirier relates that in the province of Dauphiny the caterpillars of this moth were so abundant that the attorney-general of the Province found it necessary to issue an injunction against them and ordered them to evacuate the fields. Again in 1543 a member of the city council of Grenoble introduced a resolve begging the local church official "to excommunicate these pests and censure them, in order to check the damage they were doing daily." The council promptly enacted the resolve.

Jean Goedart, writing in 1700, describes the "singular nature" and "remarkable knowledge and foresight" of the caterpillars. Réaumur, traveling from Tours to Paris in 1731, "found every oak in possession" of these insects.

In London and vicinity in 1782 damage by this insect was so severe as to terrorize the inhabitants; and in the language of Donovan "it was naturally interpreted as a visitation from Heaven ordained . . . . . to deprive men and cattle of their most essential food and leave them a prey to famine." Public prayers for relief were offered in the churches, while the municipal authorities, evidently believing that works go well with faith, gave a shilling per bushel for the caterpillar webs. At Clapham in a single day eighty bushels of webs were thus collected and burned.

In 1796 injury by this insect had become so great in France that a law was enacted by the French parliament compelling prop-

erty owners to cut off and burn the webs, the penalty for neglect being from three to ten days' imprisonment.

In 1829 M. Wallner found the caterpillars of the brown-tail moth causing severe damage throughout Bohemia, Austria, Bavaria and Switzerland. Ratzeburg states that in the late fifties the brown-tail moth ravaged the oaks in the streets of Potsdam and even killed some of them.

Altum records a local outbreak at Eberswald in 1874 when fruit trees were stripped, while as late as 1897 an anonymous writer in Gartenflora says "the larvæ of the brown-tail moth have entirely stripped the oaks and many bushes in the Tiergarten" at Berlin.

These records taken at random from European entomological works, the majority of which are in the library of this Society and to which I have been allowed free access, give sufficient evidence of the insect's capacity for harm. Lacking most of its natural enemies it is possible that here it may prove even more injurious than in the Old World.

In May, 1897, several Somerville, Mass., property owners found an annoying caterpillar plague on their pear trees, and reported the same to the Gypsy Moth Committee. Upon the indentification of the insects by Prof. C. H. Fernald the writer endeavored to discover how they had been imported. He found the depredations of the moth to centre around a Somerville florist's establishment where for many years, previous to about 1890, large quantities of roses had been imported from Holland and France. We know that this insect is a common pest in those countries. From observation, as well as from the testimony of Donovan, Salisbury, Boisduval, Senoner and others, we know that this insect feeds and spins upon the rose. Therefore, there is the strongest kind of circumstantial evidence that the insect was accidentally brought to Somerville on imported rose bushes.

The 1897 outbreak of the brown-tail moth will be long remembered by many Somerville citizens. Although a local affair involving only a few acres, it occurred in a densely populated section and hence assumed much importance. Pear and other fruit trees were completely stripped while a few shade trees were much injured. In 1898 and 1899 the control of the moth was attempted by the Gypsy Moth Committee as a result of legislative action and in those years but little damage was done by the insect. After

the state work against the moth had ceased in 1900, a large natural increase in numbers developed, and last year the ravages of the moth were notably severe throughout the Metropolitan district. Fruit trees were the chief sufferers, but shade trees were also quickly defoliated. In Allston and Brighton the damage was particularly severe, and as a result citizens of those districts petitioned the Boston Board of Health for a public hearing on the subject. The chief cause for this action was not, however, the caterpillars' injury to the trees, but rather the intense and truly terrible nettling which occurred whenever the insects came in contact with human flesh. This irritation in its worst form beggars description, as the writer can testify from personal experience. It has caused several cases of severe illness among children and aged people. So far as we have been able to determine, the irritation is a mechanical one, caused by the breaking up in the skin of the fine, brittle, barbed caterpillar hairs. It is not dependent upon the live insects because hairs from cocoons nettle as badly as those from living caterpillars, and after the cocoons are formed a person may become seriously affected by passing through a badly infested locality, the loose hairs apparently being blown about by the wind. European authorities do not discuss this matter to any great extent, apparently considering it as a well-known phenomenon. Köllar says that the caterpillars "should be taken hold of with great caution," while Fischer advises protecting the hands when engaged in the work of caterpillar destruction.

The present abundance of this insect throughout the Metropolitan district is a matter of grave importance. In Somerville, Cambridge, Arlington, Medford, Malden, Lynn and elsewhere there are enough hibernating brown-tail moths to cause widespread damage and affliction next summer. The noted pear orchards of Revere are thoroughly infested. There are so many webs in certain Belmont apple orchards that one might well believe that for some mysterious reason a part of the foliage did not fall last autumn, but remained dead upon the trees. There is hardly a pear tree within a five mile radius of Somerville but that is generally infested, while street elms, maples and willows all bear the webs of the hibernating insects. While the alarmist or pessimist may be unpopular, the writer holds that there are good grounds in this case for believing that we shall witness a most serious outbreak of

this insect next summer unless far reaching remedial measures are adopted.

If this insect confined itself to one or two species of trees its damage would be reduced and its spread limited. While the elm beetle or the tent caterpillar will not thrive in an oak forest, the brown-tail moth readily adapts itself to a wide range of food plants. Aside from fruit trees, European authorities lay particular stress on its injuries to oaks and elms. With us the pear ranks as the chosen food plant, with the apple a close second. Plum, cherry, quince and rose are well relished, while the white oak, swamp white oak, elm, silver maple, rock maple and wild cherry are among the trees frequented by the moth. This list shows that the distribution of the moth in this country will not be checked by lack of suitable food.

Since the female moth flies freely, we should look for a gradual extension of the infested area, and the writer believes it will be a matter of only a few decades before this pernicious insect will be found throughout New England. Aside from the migration of the mature insects, the caterpillars often travel three hundred or more feet in search of food. In their earlier stages they drop on teams and are thus transported from place to place. The principal spreading, however, takes place in the moth state and it is apparent that these insects sometimes fly several miles. Being strongly attracted to light, they are most abundant in the centres of towns, localities where street lights are most abundant. Multitudes of the moths are destroyed by arc lights. The writer has taken nearly two quarts of these moths from the globe of an arc light, while underneath such lamps in early morning the ground is often white with their bodies. All night long under these lamps sit toads ready to snap up the fluttering insects that fall partly stunned from the lights above. Of the moths killed by four lamps at the height of the flying season in 1897, thirty-five per cent were females that had not deposited their eggs.

The moth also has enemies of its own order in the shape of parasitic insects which sting the larvæ and pupæ. One minute parasite, *Diglochis omnivorus* Walk., is especially beneficial and destroys large numbers of pupæ. This parasite is of European origin and probably is the most important natural enemy of the brown-tail moth in this country.

Early in the spring predaceous bugs of the genus *Podisus* swarm to the caterpillar webs and destroy large numbers of the insects as they feed.

Wasps carry off a few of the small caterpillars, while the oriole and cuckoo devour them at times. We are obliged to credit the English sparrow with the destruction of large numbers of the mature moths. These birds search fences, house walls and trees in pursuit of the moths and feed eagerly upon them.

The combined efforts of these natural enemies as yet have not been sufficient to reduce the increase of the moth, and where the insect is abundant relief can be obtained only by the thorough application of preventive or remedial measures. Of these the destruction of the webs in the winter is the preventive *par excellence*. For five months of the year the caterpillars are assembled within their conspicuous webs at the tips of the twigs which may be cut off and burned with a minimum of effort and expense. So simple and effective is this preventive work that in France, as already pointed out, it is made obligatory on all owners or tenants of estates.

The implements needed are a ladder and a Waters' pruner or other long-handled pruning device. Thus equipped an active man can easily cut off and burn a large number of webs in a day. It is important that every web should be burned for the writer's investigations show that upward of ten per cent of the larvæ emerge from webs lying on the ground through the winter. In the winter of 1899–1900 the gypsy moth employees destroyed nearly one million of these webs on fruit and shade trees at an average cost of about one cent each. Where fruit trees only are treated the cost would be much less. Experience shows that to free a locality from the caterpillars all webs within a distance of three hundred feet should be destroyed. This indicates the great advantage and need of coöperation among owners of infested estates for it will profit the individual but little to clear his trees if this operation is neglected by his neighbors.

In spite of the fact that this insect is easily controlled by a little winter work, a large part of our citizens neglect it and these are the ones who fill the newspapers with lamentations deep and fervent about the middle or last of May. Where one has been so negligent as to allow the insects to commence feeding in the

spring, the proper course is to spray the trees at once with arsenate of lead. This insecticide is preferred to Paris green because it kills quickly, sticks to the leaves throughout the season and does not injure the most delicate foliage. If purchased in paste form it should be applied at the rate of three pounds to fifty gallons of water. If it is desired to make it from the ingredients there will be required:

1.2 lbs. nitrate of lead,
.5 " arsenate of soda 96 per cent pure.

Each ingredient should be carefully weighed and dissolved in water in a wooden or fibre pail. The two solutions should be mixed, when one pound actual arsenate of lead will be formed. This charge is equal to nearly two pounds of the paste arsenate of lead and is sufficient for thirty-five gallons of water.

In spraying, a fine nozzle should be used and work commenced at the top of the tree. If the poison once becomes dried upon the leaves it will keep the tree free from further damage by the caterpillars.

If this early spraying has been neglected and the caterpillars become nearly full-grown before their ravages assume importance, the infested trees should be carefully banded with raupenleim, bodlime, tar, ink or other sticky substances. The insects should then be jarred or poled from the trees and at once sprayed on the ground with strong kerosene emulsion. This emulsion will kill all caterpillars with which it comes in contact while the sticky bands will prevent the caterpillars ascending the trees. To make the emulsion there will be required:

½ lb. hard soap cut fine,
2 qts. boiling water,
1 gal. kerosene oil.

The soap should be dissolved in the water and the oil added, the whole being stirred or churned until cool. The emulsion may be well mixed by pouring it from one pail to another, letting it fall with force. For ordinary purposes it is diluted at the rate of one part to nine of water, but to destroy the brown-tail moth larvæ one part to six of water will be necessary.

Some European authors recommend the collection and destruction of the cocoons and egg masses, but these measures hardly seem advisable to the writer. The cocoons shelter innumerable

parasites whose work is of great assistance. Thus over forty of the little *Diglochis* parasites have been found in a single brown-tail moth pupa. These beneficial insects emerge from the early formed pupæ in season to attack the later caterpillars or pupæ. Farther, the cocoons cannot be handled without danger from the irritating hairs. The destruction of the egg clusters is a most arduous undertaking and one that cannot be done completely. Winter work will be necessary to clear the webs from the tops of trees where egg-clusters cannot be detected from the ground.

The feeding of the caterpillars in the fall often assumes great importance. Last year at Allston pear trees stripped in May were again defoliated in September by these insects. Since the arsenate of lead adheres so well to the foliage, trees well sprayed with it in early summer will be largely protected from the fall brood. Otherwise fall spraying is advisable, using the insecticide as recommended for the spring application.

Systematic work over large areas is necessary if this pest is to be controlled. That such a result is possible is shown by the success attending the work carried out by the Gypsy Moth Committee during the years 1898–99 when damage by the brown-tail moth was kept at a minimum. How to best deal with it now is a problem agitating many cities and towns. Municipal control seems to offer the greatest promise of success at present. A coöperative effort of all property owners cannot be obtained. Individual work is desultory and seldom thorough. The municipality has the organization and the machinery by which the work of web destruction can be thoroughly and systematically accomplished. That the moth is a pest, even a public nuisance and a menace to health cannot be doubted. Its injuries to property and persons constitute a direct tax upon the community. Why should not the municipality take charge of the work of destroying it, meeting the expense from the public treasury? It would seem that if a pest of this kind is repressed and kept confined to one part of a municipality, all the property owners benefit thereby and can well afford to pay a slightly increased tax as a premium for immunity from loss.

This problem soon will be one of the live questions of the day in this State. In the meantime we can at least keep our own trees clear from the moth, help our neighbors by information and

advice, and aid every promising endeavor to secure a thorough control of this imported pest.

We may well accept the quaint counsel of Salisbury who, studying the habits of this beautiful yet pernicious insect nearly a century ago, wrote:—

"We must observe that whilst we read in nature's book, every page affords instruction; . . . . and as men are rational beings we should always bear in view the determination as expressed, 'By the sweat of thy brow,' etc. And should know that it is expected of us to curtail the superfluities of nature's works and render those things committed to our care as perfect as our intellect and industry will admit."

Discussion.

Varnum Frost said that farmers kill everything that comes along with Paris green, and asked if that would not do for the brown-tail moth.

Prof. Kirkland replied that it would but it is apt to burn the foliage.

Michael Sullivan asked why the brown-tail moth is more numerous on the pear than the apple.

The lecturer said that we find more elm leaf beetles on English than on American elms and the potato beetle is more numerous on the potato than on the tomato and egg plant; it s the adaptation of insect to food plant.

Thomas Harrison asked if the English sparrow should not be protected, and Prof. Kirkland said not necessarily, for the few moths he kills will not atone for his many other sins.

Prof. L. O. Howard said he was extremely interested in the lecture. He had been horrified to find masses of the larvæ and thought we have a serious problem before us.

Mrs. E. M. Gill told about using the Waters' pruner and cutting off the infested branches.

The lecturer said the importance of destroying the moth should be emphasi ed by the press. There should be a law to compel municipalities to keep street trees clean. The Common and Public Garden are free from the brown-tail moth but the elm beetle is coming and the trees will have to be sprayed.

Mr. Sullivan said that the tree wardens have authority in regard

to streets, etc., but the problem is what to do with individuals. The market gardeners combatted the gypsy moth appropriation because it provided only for one insect; their idea was to make it general. He thought that a way can be found to protect unimproved lands. Much money has been expended with but little result. He believed that the views of the opponents of the gypsy moth work will change in regard to caterpillars, canker worms and, indeed, all insects.

Mr. Frost said that lice do the most harm. They are the smallest of all. He opposed the gypsy moth appropriation. What can you ever get done by a Commission? The State Board of Agriculture can be trusted.

Hon. Aaron Low, Chairman of the Committee on Lectures, announced that the abstract slips of the lecture would be ready for distribution at the lecture next week, when he hoped for a larger audience.

Thomas Harrison moved a vote of thanks for the interesting and instructive lecture, which was unanimously passed.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 18, 1902.

A meeting for Lecture and Discussion was holden * today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered.

HORTICULTURAL POSSIBILITIES FOR NEW ENGLAND FARMS.

BY PROFESSOR F. WM. RANE, NEW HAMPSHIRE COLLEGE, DEPARTMENT OF HORTICULTURE AND FORESTRY, DURHAM, N. H.

When we scan the whole field of our six states and allow ourselves to comprehend their combined length and breadth of area, hills and dales, mountain tops and seashores, forests and tillable lands, rivers and ravines, how we well up with pride and reverence for our old New England.

* At Chickering Hall.

I am to talk to you today about the possibilities for horticulture on our New England farms. When I speak of the New England farm you will doubtless think the term so broad in its application as to be meaningless. The Connecticut farm and that in Maine, for example, are perhaps altogether dissimilar, and for that matter any two farms in different sections of the same state have many points of difference. By the New England farm, after all, the average New Englander comprehends very well what is meant.

The average New England farm is not looked upon generally as offering the inducements for a successful vocation that it should. There are many reasons given for this state of affairs which I cannot discuss at length at this time. The thing that interests us most today is how to improve upon our present conditions generally in our rural sections, or in other words, how are we to improve New England farming so that, as time goes on, it will be demonstrated that the trend is not to the cities but that the New England farm offers equal inducements. The signs of the times are we believe wholesome, as what is being done in the way of education through our agricultural colleges, experiment stations, the grange, the agricultural press, farmers' institutes etc., will bring ultimate results. No one can farm haphazardly, in the old fashioned go-as-you-please way, and expect to compete as a business with other professions. Even in other pursuits as in manufacturing it is the modernly equipped machine that is found to be most economical, and those who stick to the old fashioned kinds drop by the wayside. I don't mean to be understood to place farming upon such a high basis that but few can successfully attain to it, but to emphasize that the New England farm must receive that attention and handling which modern methods suggest for expected success. We do not expect a man who knows nothing of the theory or practice of engineering to succeed as one who has shown that interest; none the less can we expect a person to become a good farmer unless he has the natural instincts of success or acquires them through perseverance.

The backbone of any nation, generally speaking, is its agriculture. Go where you will and you will find this statement to be true. Where a nation has neglected its agriculture and has not kept abreast of the times it is traveling toward destruction and

decay. The more we study the rise and fall of the Roman empire or the history of any of the older nations, the more easily we recognize these facts. Look, for instance, at the ruins of the great irrigation canals of the old world, especially those of Italy and Spain. These designate better times, a fruitful and bounteous harvest, green fields, and a land filled with a prosperous and highly-civilized people. The agriculture having since been neglected, however, it is needless to ask for the results.

To show that agriculture is of the greatest importance to a country, we need only to cite instances such as our great states of Ohio and Colorado, the one noted for its boundless coal and oil fields and the other for its vast resources of mineral wealth. We then realize that these great and valuable productions, for which these states get their reputation, do not begin to amount to their yearly agricultural resources. Take agriculture out of a country and what is left? A rocky, barren country; valuable minerals may abound, but even then, what kind of a civilization? Every one knows.

But what has this to do with horticulture and the importance of it to the New England farmer? Agriculture includes horticulture in the broad sense, and still further, a high degree of agriculture must be attained before horticulture can exist, which, in a way, is a more concentrated form of the same.

Horticulture, to my mind, is the cream of agriculture. In a comparatively new country like ours, it is perfectly natural that general agriculture should first prevail and horticulture come in when the country has been more fully opened, and an æsthetic taste established.

Horticulture is distinguished from agriculture in that it comprises the following branches: (1) Pomology, or fruit growing; (2) Olericulture, or vegetable gardening; (3) Floriculture, or the raising of flowers; and (4) Landscape Horticulture, which approaches landscape gardening. These are the subjects that come under my jurisdiction as professor of horticulture in the New Hampshire College at Durham, New Hampshire. We devote at least an entire term to each subject. The four year students of course get much more.

When pomology is taken up, the subject is divided into three main divisions: (a) viticulture; (b) orchard fruits; and (c)

small fruits. The grape being the first fruit to study is taken up in the following order: history; methods of propagation; soils and location; fertilizers; planting; culture; pruning and training; extent and importance of the business in New Hampshire, United States, and throughout the world; varieties; insect enemies; fungous diseases; remedies; harvesting; marketing etc. By the time the following subjects have been finished, viz.: the apple, pear, quince, plum, peach, cherry, apricot, nectarine, all of the tropic fruits, the various kinds of nuts, not to say anything about the small fruits, as raspberries, blackberries, currants, gooseberries, strawberries, cranberries etc., a person ought to have some sort of an idea of the scope of pomology. Similarly, I might take up the ten classes of vegetables and show the scope of olericulture or equally that of floriculture and landscape horticulture, leaving out entirely the question of greenhouse construction and management, the wholesale seed and nursery businesses, and such important studies as the evolution of plants, plant breeding etc.

We cannot help but recognize, therefore, that horticulture extends over a broad field and contains much in its grasp, doing much for a nation's welfare and happiness. Too many people think horticulture is simply fruit growing; especially is this true where fruit raising is the predominating industry; others recognize only vegetable gardening as the more important horticultural operation, while the florist doubtless thinks all others are comparatively insignificant as compared with his business, where Latin names and so many of them abound. There are whole armies of men throughout our country interested in one or more of these various pursuits, and, too, generally speaking, they are of a class above the average in intelligence and, in fact, comprise our best citizens. There is something about horticultural industries that calls out the better instincts of man, due perhaps to his closer study into the great heart of nature herself. Horticulture must be considered as refining and elevating. Fruits, flowers and landscape were never intended for association with mean or ill-tempered persons. It has been said that plants and flowers are all right for women and children to fuss with, but are belittling for men. Pity on that man who cannot see beauty and

even pleasure in a well-kept house surrounded with beautiful flowers and all of the luxuries that come with farm life.

The first point I, therefore, wish to emphasize is, that horticulture for New England farmers will more than return the interest upon the investment in pleasant homes and happier lives. There is very little trouble when passing through the state to determine which homes present cheer and welcome. When on a drive with the state entomologist of West Virginia, we found ourselves at some distance from any town where we could get dinner, and we resolved to stop at the first farmhouse that looked inviting. Although we were in a fairly prosperous section we drove for a full half hour before finding a home that met these conditions. This place had a garden; the grounds were well kept for a comfortable farmhouse, and we found our judgment was not misplaced. Not only were we able to get a good dinner, but found people whom we remember as friends. Another farmhouse in the same state, which I wish to contrast with the above, is one with a single peach tree which yielded two bushels per year it is said, and the family never sample the fruit because it has such ready sale on the market. This tree was ten years old when last I knew it, and I doubt if it has ever occurred to the farmer that more would be profitable. I don't believe this is an exaggeration over what can be found on many New England farms today. If there is any class of people deserving of fruits, and plenty of them, it is the farmer and his family, and who can have them more easily?

All lines of horticulture are found in our New England States today. When we are asked to what extent these various industries are followed, however, it seems to me this question is not and can not be answered enthusiastically. True there are exceptions but from observation I believe that we drop very far short of our possibilities. When our men of apparent horticultural interests are indifferent and pay little attention to modern methods or care little for exhibits, meetings etc., wherein much good might be gained to the benefit of all, what can we expect from others?

Were our markets far distant and competition close as in many sections of the West, doubtless conditions would bring out our keener business methods, but is this any reason why we should

be any the less careful about our opportunities? I can see little reason for the existence and great good of strong meetings in one section less favorably located, while in others with great natural advantages comparatively so little interest is taken.

During the past few years work at the experiment stations has, we believe, awakened more or less interest, but much of the time has been spent in finding out to what an extent the horticultural interests really prevail in various sections.

The possibilities in horticulture for New England farmers I believe are almost unbounded.

Were our people aroused to the interests of horticulture and would they devote an equal amount of attention to studying out the problems in horticulture as they have in dairying, I predict that for the time and money invested the results would be even more profitable. To demonstrate, I ask our agriculturist how much is made per cow per year, over and above cost of feed, shelter and labor, and I am told that, on the average for the country, nothing is made, as it is estimated that a cow must produce 3,000 pounds of milk to meet her expenses alone. Whatever is produced, in other words, over and above this amount, therefore, may be considered as profit. I do not care to go into the discussion of the dairy problems, nor throw any cold water on the enthusiasm along this line of agricultural progress in which New England deservedly ranks well at the top, but to emphasize further by comparison for the benefit of horticulture. I ask if a good thrifty Baldwin apple tree does not bring in as much profit as a cow. I doubt if I could get many in this audience to exchange a cow for an apple tree, but if figures be true, and the one under comparative conditions is as profitable as the other, I say, give me the apple tree. I am sure that while getting up at four o'clock in the morning, or tending cattle all winter is not a hardship to a man who is used to it, nevertheless most people would prefer going to work at seven o'clock. On the other hand an apple tree amounts to comparatively little, if it receives no care. With a little care, however, what a liberal response! After a Pomona Grange, attended a few weeks since, various farmers said that had it not been for their apple crops from time to time, they could not have kept out of debt. Upon inquiry, however, I found, as is generally the case, their orchards were but indifferently

cared for. Another man at this same meeting informed me that his young orchard which he set in 1891, and had given good care, yielded twenty-five barrels of fine fruit in 1899.

When I was out with the State Board of Agriculture attending farmers' institutes in the fall of 1896, the season of our over abundant apple crop, the subject given me to talk upon was "orcharding" and each time when introduced a contemptuous smile was easily detected throughout the audience. Through my discourse at that time I endeavored to overcome the mistaken idea that because that season was an off-year with its over abundant apple crop, it was no reason why in years to come, the crop would not justify itself. It is only by looking at a business like that of apple growing, for a period of years, rather than a single one, that we get an idea as regards fruit growing. I remember making the prediction at that time, that a period of low prices might result in a benefit to the industry, for larger export trade was made that year than ever before and, as well, an undoubted increase in home consumption. This tends to strengthen the demand for future crops. It is needless for me to ask if these predictions have come true. In 1898 we sold from our old trees at the college alone five hundred dollars' worth of apples, and these trees are far past their prime of life. The season of 1899 we secured about an eighth of a crop which brought good prices. In 1900 we again sold a large crop of fine fruit at good prices and the past season our crop was light.

I mention our own experience because it represents fairly well the remainder of the state. Many instances have come to my notice where in the year of over-production, a few people in various sections cut down their apple trees on account of their great discouragement. Is it necessary for me to repeat the old saying "not all fools are dead yet"?

Apple growing is an industry full of the greatest of possibilities, well worthy of more attention by the New England farmer. What has been a greater blessing to western New York than her great apple orchards? I was surprised when for the first time I visited some of the farms about Rochester, in that state, and found farmers whose main livelihood came from the apple orchard. Only recently when traveling West, I by chance met a large apple buyer and cold storage man. Among other things he said that

although Missouri and Arkansas can boast of their mammoth apple orchards, nevertheless four counties in New York govern the trade of the world.

The New England states are equally as well adapted to the growing of the apple as New York, and not only do I wonder why more apple orchards are not set, but as well, how it happens that capitalists do not invade our states and take away our so-called birthright. I have heard of agitations in the latter direction only during the present year. While I am enthusiastic in fruit growing, I should far rather see a strong and healthy internal growth in our state, in which the general New England home is the gainer, rather than a monopoly. When at Chester, N. H., a few years ago I had pointed out to me orchard after orchard, which were the results of the efforts of one man during the past generation. His work has resulted in this section taking preëminence in the state as an apple section. These trees are on the decline, however, at present, and unless they are replaced with new plantations it is but a matter of time when this industry has passed here. To a person who has lived for the greater part of his life in the West to come into New England and see the neglect, especially of fruit trees, which offer so encouraging returns, it is hard to understand. After living here for the past six and one-half years, and having more or less of an opportunity to visit the various sections I have become more and more convinced that for general horticulture, and especially apple growing, there are no states in the Union that offer greater inducements than the New England states. Had I the time and means nothing would daunt me from starting an apple orchard of my own; and were I a farmer, much less would I hesitate enlarging my area in orchards. It is a fact that apple trees do not come into bearing immediately and simply setting the trees in the ground never to be looked after, other than in an indifferent way, will not bring results. This sort of negligence in fact never brings results in anything. The old saying, "a laborer is worthy of his hire," is too true, and a man usually gets pay in this world in so far as he has backbone and energy to accomplish something. I often feel after talking at a meeting of this kind, that I am too enthusiastic as I ever fear lest some person may glean only that portion of my talk that will give him enough enthusiasm to set out

some fruit and then, "cool off," leaving the poor trees to linger and die. It is the man who comprehends the whole situation from beginning to end, and who begins with system and method, that succeeds. This is the kind of men we want to enlist in our fruit raising in New England. I am acquainted with a prominent actor who had amassed a large fortune, and becoming infatuated with a certain inland watering place while touring there in summer, finally concluded to purchase a farm facing the lake and upon this to devote his summer vacations. He sent for catalogues, far and near, and resolved to make his farm a paradise. Seeds, fruits, and vines of all descriptions came pouring in by freight, express, and mail, and all hands were put at work, the actor among them, to set them out.

It is needless for me to say the outcome could have been easily foretold. It was not until some two or three years had elapsed that the proprietor awoke to a realization of what such a thing means. The farm has been sold, the actor no more enjoys his former pleasure, at this particular place; and furthermore, this instance has been a drawback in many respects in that section. People say what is the use of going into fruit raising, and point this instance as an example. I mention this to show that a person should comprehend and understand his business, whether it be horticulture (fruit growing) or otherwise. We may have plenty of literature on the subject also, and even then these mistakes like the one alluded to can be made. Literature is of little account unless it is read and digested. I was at a grange meeting and talked upon the strawberry; one of my attentive listeners asked several questions, and finally asked why the experiment station did not print and send out such information. I answered that such had been done in this very instance. Upon further investigation I found this person's name upon our mailing list, thus demonstrating that this very information was already available in his own household.

Examples like this convince me that discussions at our granges, institutes and meetings of this sort are necessary. Many listen who will not read.

As to other fruits than the apple in New England, while perhaps they cannot be recommended for so general a crop for all

farmers, nevertheless, they should be given due consideration and have their place on our farms.

General horticulture upon the farm must commonly be considered of second importance. In order to get any results there must be a definiteness of purpose. What to grow will depend upon a person's tastes and likings. One person will make a success with one thing and another with another, but there is something in all lines for the business person.

Horticulture and agriculture many times go together, and the two make a success where either alone might fail. Each person must necessarily study out his own best conditions. Dairying and gardening go well together; where it is necessary to peddle milk the same wagon will carry the vegetables to market. Other combinations can be made as gardening and pig raising, chickens and plums, and general farming with orcharding.

To make a success in anything, I care not what it is, a person must have a comprehensive idea of it. With this well understood the subject before us, "Horticultural possibilities for New England farms," may be considered under the following heads:—

1. Definiteness of purpose.
2. Basis of estimation.
3. Knowledge of modern culture.
4. Study of marketable varieties.
5. Executive ability in marketing.

As farmers we should have a definiteness of purpose which shows itself in our system of rotations, adaptable crops, etc.

With up to date methods of farming I am sure horticulture will appeal to us in some of its various forms, and it is only those of us who attain to this degree of proficiency that will make much success. A poor farmer will rarely make a successful horticulturist. Horticulture is more intensive than general farming, and to my mind is the cream of agriculture. It may be that horticulture will remain of secondary importance, as it is today on our farms, for some time, but the thing of utmost importance is that whatever is attempted should be with definiteness in view. If, in spite of our neglectful methods, fruit growing brings the most profitable crops found on many farms today, what, I ask, can we make of it if given more definite consideration? With a wholesome public sentiment in favor even of apple-growing, to say

nothing about the innumerable other horticultural crops, New England can be made a country unsurpassed.

We can say without hesitation that the apple crop is a sure paying crop everywhere in New England. Of course different sections differ more or less locally as to soil, exposure, etc., but by studying the existing conditions the problem can be easily solved. With the rapid development or evolution of American fruits there are varieties adapted to all conditions of soils and climates. With the introduction of Russian blood we have varieties of apples and cherries that withstand even the severe winters of northern Vermont, New Hampshire and Maine. Already we find such varieties of apples as the Bethel, Arctic, Oldenburg, Mackintosh, Wealthy, Pewaukee, Wagener, Scott's Winter, St. Lawrence, etc., coming from these sections in wholesome competition. This is indicative of what can be accomplished when men set about it to overcome obstacles. I attended a local fair at Bethlehem, in the midst of the White Mountains, a few years ago and to my utter surprise found that the horticultural displays of not only flowers and vegetables were fine, but their fruit represented as many varieties and exceeded in display, anything that I saw that season. I was informed that the Baldwins were grown in a protected place, but the other fruits simply received the ordinary care customary in that climate. When such a display can be grown in the heart of the White Mountains, we need not complain of our conditions elsewhere. One man is reported as growing a few acres of strawberries that year, and selling the product at an average price of twelve and a half cents a cup which is equivalent to a pint. Surely strawberries are hardy everywhere and it only demonstrates what the possibilities are in cold climates with this crop. Mr. Howe of Lancaster, New Hampshire, is a large apple grower in that region and says the Bethel apple is to that section what the Baldwin is to southern New England. When I was on a lecture trip with the Maine State Board of Agriculture last summer, I found that the Arctic apple is being very largely planted in the north-eastern part of the state. I was surprised also to find, when on this trip, a gardener at some distance north of Bangor growing and shipping all kinds of small fruits for the Boston market. I might go on further to demonstrate that even in our colder sections of New England the possibilities

for successful horticulture are even greater than is generally supposed. Here as elsewhere the man at the helm in the larger half of success.

For central and southern New England little need be said upon what we can grow here, before such an intelligent audience as always forms the constituency of the Massachusetts Horticultural Society. This Society has listened to such men as Hale of Connecticut on the peach, and others equally experienced and successful with other horticultural crops. The results of such men assure us of the success of the specialist; now with a definiteness of purpose and an understanding of their culture these products can be raised equally successfully in a limited way on the average New England farm.

(2) Can we estimate with any degree of accuracy what can be expected in the various pursuits on the New England farm? This is a question well worthy of our consideration. I thoroughly believe it is our duty and privilege to estimate and figure out our chances for success or failure in all farming undertakings. No one should undertake a business who has not the possibilities at least for what he seeks. To demonstrate, we hear so much today about farming not paying from men who are already engaged in it. I have taken occasion to examine into many individual cases of this kind and find the conditions for success are impossibilities to begin with. One man whom I know has a one hundred acre New England farm, two-thirds of which is forest or natural pasturage, so called; the remainder has been under cultivation at some time or other, but nine acres are all that he tills each year. Now the forest land furnishes him his fuel and not much more under his method of management; the meadow his hay, which about compensates for the labor in harvesting it, while the nine acres under cultivation must produce his salary. He raises an acre or two of potatoes and the remainder, with the exception of a small farm garden, is devoted to ensilage corn. He makes milk for retail trade, carrying about ten cows, has a span of horses and thinks he needs a cheap hired hand. This man is staring providence in the face and attempting an impossibility when he courts success under his conditions. His taxes, horse and cattle foods, hired labor, depreciation in buildings and tools, etc., amount to more than his income. He ought to know that he is attempting

an impossibility, and finding fault will never overcome his conditions; think of it, only nine acres, which if it produced maximum crops each year would not give him cash net returns of over $30.00 an acre for the crops he is raising, or $270 possible income for the year.

If a man expects to make a success he must form some idea of his real worth, and what he ought to make as a salary for his own satisfaction; then study out what he must do in the way of farming to accomplish the desired results. If I consider myself only a $300 man and I am growing hay for market, if my land is in good heart and I can produce an annual yield of three tons per acre and this sells at say $15 a ton, it will take only ten acres to satisfy my demands, allowing one ton per acre for expense in harvesting. If I will not be contented with less than $1000 or $2500 a year I must greatly enlarge my base of operation.

Here again is where horticulture comes to the New England farmer's assistance if he courts it. If the nine acre man had devoted his attention to some horticultural crops, such as an acre or so of currants or combination of any of the following crops as raspberries, onions, squashes, cabbage, tomatoes, celery, cucumbers, gooseberries, strawberries, peas, sweet corn, etc., or orchard fruits, if well taken care of, his chances for success would be possible.

I know of one man in New Hampshire who netted $285 on currants from one acre four years after the plants were set. An acre of currant bushes set four by five feet takes two thousand one hundred and seventy-eight plants.

Mr. Crawford of Ohio has raised seven thousand quarts of strawberries on a single acre. You and I ought to raise one-half that amount or three thousand five hundred quarts which at ten cents equals $350.

Muskmelons in hills five by six feet make one thousand four hundred and fifty-two hills to the acre, and the small Netted Gem kinds will average ten or more to the hill under good culture or fourteen thousand five hundred and twenty melons, which at four cents apiece would bring $580.

Sweet corn planted three feet by nine inches allows nineteen thousand three hundred and sixty stalks to the acre or one thou-

sand six hundred and thirteen dozen, and if sold at eight cents per dozen gives $129 per acre.

Six hundred bushels of onions per acre is not an unusual yield, and the average price for them is generally good. I know of one man whose success with onions has been the means of awakening the interest of many others, and resulting indirectly in the whole community becoming prosperous. Another New England man of my acquaintance has averaged more upon a very small area of land, the main crop of which is onions, than any general farmer about him whose invested capital is from ten to fifty times as great.

Squashes, although they have been hard to raise during the past year, nevertheless offer good returns. The sale for scalloped and crooknecks is usually limited, but the early marrows and later sorts give reliable returns.

Celery is a crop that if well grown, and the culture is simple, usually pays well. An acre of celery set in rows three feet apart and six inches in the row will contain twenty-nine thousand and forty plants or two thousand four hundred and twenty dozen, which, should they bring only twenty-five cents a dozen would give $605 returns. Celery is also a second crop, an early crop of something else being taken first. A New Hampshire man, not a farmer, tells me that he raised in his small garden on a city lot the past year $110 worth of celery on a sixty by sixty foot area or at the rate of $1400 an acre. The same season he raised two outdoor crops of heading lettuce on a bed six by sixty feet, the sale of which brought $15 or at the rate of $1815 an acre. While this seems large it only means a price of about two cents a head and a square foot of space to grow it in. His market was simply the retail grocery stores of Laconia, New Hampshire, and not fancy prices.

Cabbages pay better than most people realize, and what farmer cannot raise them. Set two by three feet, an acre requires seven thousand two hundred and sixty plants. The price per head or pound varies greatly but anyone can easily estimate his possibilities with this crop. Last spring we grew the newly introduced Early Spring variety, setting it two by two and a half feet apart, and as the heads averaged five pounds and were round and early, we realized three cents a pound for most of it, which was at the

rate of $1305 an acre. Even at two cents a pound it brings $870.

Tomatoes are as commonly used as almost any crop grown. Although the tomato is one of the rankest of plants and an assured producer, it is ever in demand in New England. Even with an increased demand for the canned product, which largely is shipped into New England, our local markets continue firm. Not only do we find a market for all the ripe fruit but I find gardeners who are growing the late Buckeye State variety simply for green tomatoes. The green fruit when well graded brings fifty cents a bushel at retail or forty cents at wholesale. Five hundred bushels per acre of green fruit is a fair estimate which at forty cents equals $200 which can be relied upon. For ripe fruit the price will average seventy-five cents or more for the season. Our Earlianas, one of the newly introduced early varieties, sold during the fore part of the past season at $3 a bushel.

Small fruits of all kinds sell well here in New England. I have already referred to the red currant, but raspberries, both the red and black-caps, are in good demand, and from my experience usually sell for a third to a half higher price per quart than in the West. Blackberries and gooseberries are often not to be had in some of our fairly good sized towns.

There are many other vegetables that I can not take the time to emphasize here, which can be made paying crops in a limited way if not on a fairly large scale on our farms. Bunch beets sown in rows sixteen inches apart and thinned to three inches in the row will give forty-three thousand five hundred and sixty bunches of three beets in a bunch to the acre. These, if sold at an average of three cents a bunch, give $1306.80 as the returns.

The plum crops should receive more attention generally on our farms. While the black knot, plum curculio, and fruit rot, are somewhat troublesome, they nevertheless should not discourage anyone if the trees are given the necessary care. At the New Hampshire Experiment Station we have fruited Burbanks at the rate of one and one-half bushels on five year old trees; and I was interested to note an article from Mr. A. A. Halliday of Windham County, Vermont, in a recent publication, stating that he had secured as high as seven bushels per tree from six year old Burbank trees. When we realize that one tree requires an area

of only sixteen by sixteen feet, or at the rate of one hundred and seventy trees to the acre, surely the returns must be good. Other varieties of plums as Abundance, Lombard, Chabot, etc., are equally good.

We have one man at Wilton in our state, who raises on an average eight tons of grapes a year, and has had success in growing this fruit for the past twenty years. Some think the grape not adapted for many sections of New England, and still others think that even if they could grow them, they would be unable to sell them on account of the competition with the quantities of this fruit that come into New England from other states. I believe both of these notions are erroneous. Adaptable varieties can be grown in most sections if properly handled, and there is always a loyalty to home grown fruits. Mr. Bachelder, the man referred to, tells me that all of his eight tons are sold within a radius of five miles of his place. The Moore's Early, Worden, Wyoming, and Green Mountain have all done well at the New Hampshire Experiment Station.

(3). There is little reason why a man with any interest in his calling should not be able to inform himself in regard to the principles of the modern culture of any of our horticultural crops. The days of apprenticeship methods of finding out how to do things are relegated to the past; today we have plenty of literature and the main test is putting it into practical application. Culture, however, means much more than we are liable to credit it with. The culture of any plant means ideal conditions for its development for whatever purpose desired.

(4). Too much attention cannot be given in studying varieties. These are changing constantly, and it is highly necessary that we take advantage of those that are best adapted to our conditions and the markets.

(5). Executive ability is needed upon the average New England farm, for success, as much as it is anywhere. The average New England farmer needs to study business methods, and horticulture, with its greater intensiveness and variety, will assist very much in testing the business ability of men everywhere should they engage in it. Perishable fruits or vegetables demand active business methods in handling at the right time, while the other farm crops like hay, milk, beef and wood are handled "any old

time," as they are staple commodities. Business methods stand for a large share of success in anything, and it must not be lost sight of on the New England farm.

Horticulture on the farm has its place, and should not be neglected. It pays for family use if in no other way. Horticulture on the farm pays for the education of the young. Horticulture on the farm pays, for it keeps the boy there. Horticulture on the farm pays, for it makes the pocket money. Horticulture is education in plant life. For example, grafting, pruning, budding, propagation, rotations, varieties, soils, fertilizers, cultivation, etc.; these and many more can be studied. It is with these and many other advantages that a much broader horizon is attained. Study possibilities and aim high. Horticulture demands time. Peter Henderson recommends that seven men and three horses should be had to run a market gardening industry of ten acres successfully; and that when embarking in such an enterprise a capital of at least $300 per acre is necessary. One thing that ever needs emphasizing is, do not attempt too much.

It has not been thought advisable nor is it possible to go into other than a general discussion of the subject of "Horticultural Possibilities for New England Farms" in the short time allotted me. Such subjects as details in small fruit growing and various other vegetable and fruit crops, not to say anything about general floriculture and innumerable other questions of horticultural interests, cannot be touched upon; they in themselves would each require much time and afford material worthy of much consideration.

In closing I simply desire to say that under proper husbandry, and modern methods, I believe that we at present little realize the possibilities of horticulture in its various branches as adapted to the conditions of the New England farmer.

Discussion.

A gentleman said that there are some farms that will support a cow but will not support an apple tree. Most apples have failed with him. He has raised the Bethel and Jonathan. His grapes bear abundantly but do not ripen. His farm is about forty miles from Lake Memphremagog.

The lecturer said that Professors Craig and Saunders believe in the production of varieties that will be adapted to these localities. Consider what has been done in Minnesota. The majority of the Russian apples were autumn varieties but we are getting now varieties of all seasons.

William C. Strong said that he was born in the same region as the former speaker (Hardwick, Vermont), and that the apple trees there were vigorous and abundant in produce. He said that there was one important point which had not been emphasized: — the quality of western apples does not compare with the solid fruit of New England which is superior to almost any fruit in the world.

In answer to a question of Thomas Harrison regarding fertilizers, Prof. Rane said, Don't overfeed with nitrogen. We do not want trees that take a thirty foot ladder. When the tops are formed substitute potash and phosphate for nitrogen. Grow fruit instead of wood.

Michael Sullivan asked whether the lecturer would recommend the continuous culture of apple orchards to get good fruit.

Prof Rane said that while trees are growing they need continuous culture to keep them going. After fifteen years the question of culture would be left to the man's own judgment. If the trees are hardy and healthy they will need but little fertilizer. Mr. Sanborn says that his hay crop on nine acres has paid, and his apples also, but he ploughs up when his trees show signs of needing it. One ton of hay per acre will not pay, but three tons will, and if you can get them and a crop of apples at the same time you are so much better off.

Mr. Sullivan said that eight years seems a very short time for Baldwins to come into bearing. He has had them in twelve years. He raises vegetables but finds his fruit quite as profitable as any part of his business.

President Hadwen said that the product from cows sold every day while apples sold once a year only. A young man with a family needs an income every day. His experience was that he needed both. One advantage in having apples in grass land is that you can get a crop of both if you feed for both. Apples from grass land keep better.

Thomas Harrison asked the lecturer what to do with land that has only an inch of soil.

Prof. Rane replied that a man must study his farm, and suggested sheep raising. Where sheep cannot be raised on such soils forestry comes in. Thin and light land should be turned over to forestry.

He said that he did not want to leave the impression that he was not in favor of a few cows to supply the family.

Varnum Frost said he thought farming was overdone and played out in New England. You cannot get more than a new dollar for an old one; last year, not more than seventy-five cents. The prices named by the lecturer are three times what we can get here. He thought the President was correct in regard to the keeping qualities of apples in grass land.

Prof. Rane said that the New Hampshire Experiment Station has paid all its labor by its products.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 25, 1902.

A meeting for Lecture and Discussion was holden * today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered.

THE BUSINESS END OF HORTICULTURE.

BY PATRICK O'MARA, New York, N. Y.

Ladies and Gentlemen:—

When our good friend Mr. Low invited me to read a paper on some subject connected with horticulture I explained, as I did once before, that while being grateful for the honor, I was at a loss to know upon what lines I could prepare a paper worthy of the attention of this Society, second as it is to none in the world. I solicited his advice and the advice of the committee through him and was further complimented by the assurance that anything I should prepare would in all likelihood be satisfactory to them. Being thus, so to speak, at my wit's end, I chose "The Business

* At Chickering Hall.

End of Horticulture" as a title for such observations as I might offer you.

I will stick to the text as closely as possible; but at the very outset the temptation to wander is irresistible. Some may ask if I consider the end of horticulture to be business. This prompts me to observe that I am not bold enough to prophesy the end of horticulture. It also prompts me to observe that since coining the title I have been industriously engaged in a mental quest for the business end of it, but up to the present moment I have not run down any end that looks like it; or tied a knot on it. The quest for the business end of a bee or a mule would be a simpler matter.

An acquaintance of mine in the trade once sagely remarked in my hearing that in his opinion any fool could grow good plants, but that it required a man of great wisdom to sell them. It looked to him as though he had certainly discovered the business end. I may remark parenthetically that the gentleman referred to was a grand and gloomy failure in both departments; he is a fair sample of the "know-it-all." There is a story told to the effect that a young man who was ambitious to succeed in business once obtained the ear of the late Commodore Vanderbilt and sought his advice. He is reported to have asked him whether the secret of success in business was knowledge or some fortunate inspiration. The gruff old Commodore tersely replied; "No, my young friend, not inspiration; perspiration, sir, perspiration." And it may be truly said that if the business joint of horticulture is anywhere in particular it is at the elbow and it should be well greased. Eternal vigilance is the price of much that we have and hold; it is particularly the price the successful horticulturist must pay. The "art that doth mend nature" is not one for the *dilettante;* it is one for the sober, steady, persevering, painstaking, intelligent worker. The cry goes up from many who fail: "I have no luck with my stuff like so-and-so." That wail is even heard from the professional florist who ought to know better. If he watched Messrs. So-and-So he would discover that they are men who studied cause and effect and had the sense to apply as well as the energy to execute. They might perchance be unable to prepare an exhaustive treatise on structural formation of plants or give an analysis of the soil; their methods might be

rule of thumb ones; their school might be, and undoubtedly in ninety-nine cases out of a hundred is an empirical one; but they obtain gratifying results and that is the main point. Doctors' children are not always the healthiest. If there is any calling, trade or profession which requires keen discrimination, quick perception, intuitive grasp and prompt decision in a greater degree than another, it is the horticulturist's. He is dealing with the forces of nature, his charges are mute and cannot announce when something has gone wrong. He must see it. He must do more than that; he must know, if he is to be successful, what is likely to injure them and see that such is avoided. An ounce of prevention is worth a ton of cure in horticulture. Locking the stable door after the horse is stolen is mighty poor satisfaction. These random remarks I trust will be found to have some pointed reference to the "business end" of horticulture.

My experience in the trade has been exclusively along the lines of commercial floriculture so that necessarily my observations will be mainly confined to matters less or more intimately connected therewith. I have enjoyed the advantage of some experience in other branches. I 've rubbed elbows with that interesting personage known officially as the "Ornamental Horticulturist," or, as one of my more learned editorial friends would have him dubbed, "The Ornamentative Horticulturist." A few years ago he was, I suppose, the artist who made a striped elephant with a fluffy tail and planted him on the lawn, who made butterflies and ships, birds and beasts biped and quadruped, who had wheels in his head and got rid of them by expressing himself in wonderful convolutions, rings eccentric and concentric; all in plants that outrivaled Joseph's wonderful coat of many colors. The pity of it is for one of the business ends of horticulture that his tribe did not keep on increasing. I am reminded of a story in connection with that branch of gardening. An itinerant disciple of the "art that doth mend nature" was called in to lay out some beds on a modest lawn. His "art" had not risen above round, square, and star-shaped beds, so when his whilom employer expressed a desire to supplement them with an oval bed he looked embarrassed; he was not quite sure what an oval bed was. It was explained to him that it was egg-shaped and he understood. When the owner came around the following day and looked at the oval he was dis-

appointed; it was overweighted at one end. He reproached the "artist" concerning it and a great light broke in upon him when he was told by him: "Sure, sir, you told me to make it egg-shape; and isn't an egg bigger at one end than the other?" There is some humor even in horticulture. A prospective purchaser went into one of the seed shops, not a thousand miles from here, where garden and farm implements were displayed and asked a young clerk if he sold whiffle trees. He was gravely informed that they did not keep them there but he would inquire of the nursery department. Another purchaser who was giving an order and soliciting advice from a clerk as to quantities of seed wanted for certain numbers of plants finally ordered a pound of raffia. The clerk thinking he was ordering too much of it gravely asked him how many plants of it he wanted to raise? A tree agent some years ago astonished the home office with the quantities of tree pæonies he was selling. Upon investigation, it developed that he was recommending them as shade trees, which had in the summer the wonderful flowers shown in the picture book which he carried. These are incidents connected with the business end of horticulture and they do much to relieve the tedium of the day and hour.

Now, let us consider where the business end, or rather ends of horticulture are to be located. First in importance is the seedsman. Even here there are to be found differences; all do not travel on the same road. There is the box trade for instance, a separate and distinct branch. Long before a town can support a seed store the box makes its appearance. The druggist, the general storekeeper, the jeweller, the grocer, almost any shopkeeper will be the distributing agent for the seeds. The growth of this branch of the trade is something marvelous. In one generation, we have seen one firm expand from a little shop which barely paid the living expenses of the founders into a great institution, which ranks high among the finest commercial houses in the country. So systematized is this particular branch that the seed box follows close upon the heels of the settler into the most remote quarters. Not many years ago I was in a thirty day old town seventy miles from the nearest railroad station, yet the seed box was there before me. Another branch of the trade was represented among the first settlers there, viz.: the seed grower; so

we see that two branches of horticulture are found in the forefront of the developing line. The seed grower is a horticulturist, who does not figure very prominently in horticultural essays, and yet he is an important factor. Many people believe that the large seed houses have one big farm where they grow all their seeds. That would be impracticable for the reason that different seeds can be better grown in different localities. Peas and beans can be better grown in northern than southern localities. California will produce better seeds of many kinds than any other part of the country. Portions of Nebraska produce the best seeds of vine crops to be found in the country. Long Island seems to be the ideal place for cabbage seed production. Portions of Connecticut are unrivalled for the quality of onion seed produced. Northern New York and Maine are unexcelled for potatoes The great Northwest has exceptional possibilities as a seed producing country. Europe still supplies its quota of seeds and bulbs, but with the vast extent of territory over which floats the American flag, with the wide range of temperature, the rich soil, and the energy and intelligence of the men engaged in horticulture, there is every reason to believe that in the near future we will not only produce all we need ourselves, but we will be able to control the markets of the world in seed production. The seed grower for the most part is a contractor, who takes the stock supplied by the seedsman and delivers the entire product. His work is supervised by the seedsman, who inspects the growing crop and carefully "rogues," that is, destroys any plants which are not up to type, which, in other words, show a reversion to an inferior type. It often happens that an improvement will be apparent in individual plants and these are carefully marked, the seed product kept separate and sown the following season. This is the source of many of the improved varieties. It is obvious that the greater the amount of care bestowed on inspection, the greater the intelligence brought to bear upon it, the better in proportion must be the result. It is upon this care and intelligence that reputation is based, hence the difference in stocks sold. The seed growers are often hybridizers, and to the patient work of these men we owe many of the improved varieties now in existence. The greatest vehicle, unquestionably, for developing horticulture is the catalogue of the seedsman, the nurseryman and the florist. The

first is beyond doubt the most important in its effects and might be called the centre from which the business ends radiate. The millions of catalogues distributed annually are an inspiration to the recipients and to the hundreds of thousands who are influenced by seeing their neighbors engaged in horticultural work. Great is the responsibility of the catalogue firms and great is the labor involved. It is undeniably the most trying of all the business ends of horticulture. The men engaged in it must be ever on the watch for new and improved varieties; they must lead and not follow popular opinion; but yet they must be cautious not to get too far in advance. They must be ready to explain why crops fail, they must be able to advise remedies, they must be entomologists, pathologists, be up in soil chemistry, and when the great extent of the country is considered, it is readily understood that the task is not an easy one. They must be ready to tell when and what to plant or sow in farm or garden from Puget Sound to Florida Keys, from Aroostook to San Diego. They must be able to tell the dear old lady what is the matter with her sick geranium or her debilitated begonia. They must be prepared to have their honesty impugned whenever a clerk makes a mistake and sends the wrong variety, they must be prepared very often for the same contingency when, from causes entirely beyond their control, crops fail, plants die or seeds do not germinate. To be successful, the catalogue man must be not only resourceful in business methods, enterprising in developing and introducing varieties of merit, but he must be optimistic, he must be able to communicate his optimism to his customers, he must be liberal in his dealings, be ever patient, be a natural diplomat, and above all things be scrupulously careful to send out only the best obtainable.

What is said of the seedsman is also applicable in a great measure to the nurseryman. The details of his business are hardly as numerous, however, consequently not as trying. His business is in a larger degree localized, which tends to simplify it. With San José Scale, Peach Yellows and other troubles incident to his stock, and the legislative efforts to control them, he is not without troubles of his own. The nurseryman, too, must be up in the "ologies," even more so perhaps than the seedsman; he must be a fair lawyer as well and be an expert in transportation matters. The lithographer and the tree agent are powerful agents

to the nurseryman. The latter armed with his book of plates wends his way over the face of the land, in many cases reviled and thust out, treated little better than the hobo. His book is sneered at, and while it may be a trifle highly colored and the size of the pictured flowers and fruits may be a little exaggerated, yet a long experience has shown that such are the best fitted to tempt the wavering into purchasing something which will really be a benefit to them. It is a case where the end justifies the means, if there ever was one. Many a garden would be given over to weeds which now supports a few fruit trees and small fruits, many a porch and dooryard would be as bare of living ornament as the proverbial "Job's Turkey" was of flesh and feather, were it not for the tree agent and his book. That business end of horticulture is not "one grand sweet song" for the men engaged in it; the emoluments arising from it will not make plutocrats of them. Be patient with them then, if not for themselves at least for the good they accomplish. The good they do lives after them; the evil is cut down and cast into exterior darkness.

The grower for the catalogue firms is another of the business ends of horticulture, that is the man who grows plants in quantity on contract, or who grows them on speculation to sell in large quantities. His field embraces greenhouse plants, fruit plants, hardy outdoor plants, shrubs, roots and bulbs. It is a safe business on the whole, but it is not capable of great development like the catalogue trade. It is generally followed and taken up by men who have some land, but little working capital, and the profits are as a rule very meager. Because of the limited capital with which it can be entered, provided the land is already secured, a great many of the smaller nurserymen, florists and even farmers have entered it of late years, and it may be safely said to be a well plowed field at the present time. Because of the fact that these men are not in touch with the retail market, they grow many things for which there is not ready sale; failing to obtain buyers for these at remunerative prices, they are frequently taken up at a sacrifice and pushed by catalogue men to the detriment of better things. I think it may be accepted as an axiom that the successful catalogue business man must be a bona fide producer, either under his own direct control or by the contract system.

This applies to plants more than to seeds or bulbs which can be treated as merchandise. The expense of catalogues, advertising, packing and growing hardly admits developing a large business by buying plants and selling again; besides there is always the trade grower who has a surplus of something inferior to offer at a tempting price and it is well to beware of "the great pennyworth."

The business end of horticulture represented by the cut flower grower is perhaps the simplest, in a business sense of any, in that the skill of the grower is the paramount issue. His product is sold for what it is worth on sight. Although the market takes exasperating tumbles, he has little if anything to do with it. He is saved the nerve wear incident to bargaining, planning how to get rid of his product, how to get his money after he has sold it, and the many and vexatious problems incident to barter and sale. I speak of the grower who supplies the large cities and consigns to a commission firm. Of course he is constantly consigning the commission man to a place warmer than his hottest greenhouse; but that is his privilege and the commission man gets accustomed to it so no one is much hurt. The market is cut out for him. The rose grower has the great trilogy of Beauty, Bride and Maid; the carnation grower has a little more vexed problem as to the varieties he will grow, but it is plain sailing for the violet grower. The various committees of the leading trade societies settle many a problem for the carnation and chrysanthemum grower; but they like to nibble at the new things so as not to be caught napping. This gives them a chance to grumble once in a while, but it makes life interesting for them. There is always something new coming up in roses, too, to vex the grower. If the man who gets hold of the new one first has a reputation and can succeed in growing it well, it is an easy matter for him to get a market for the plants and so turn an honest penny. But business instinct counts just as heavily in growing cut flowers as in the other business ends of horticulture. It was business instinct which years ago influenced one of our leading growers of roses to discard every flower which did not come up to his standard. That policy made his reputation and was the foundation of his success. It worked both ways, it concentrated his efforts on producing something up to that standard and maintaining it, while it made his reputation. It did more; it elevated the stand-

ard and really made two classes of growers in all lines of cut-flower growing, the one which aims at "fancy" flowers and which embraces all the high class establishments, the other which does the best it can and takes things as they come. I have been among growers of violets and have seen flowers discarded for slight imperfections of color which the unobservant eye would scarcely detect. I have seen roses discarded which a few years ago would have been sent to the market for what they would bring. A walk through the wholesale districts in any of the large cities will reveal to the observer stocks of roses, carnations, violets etc. which seem to be different varieties, although the same, the difference being in the growing mainly, but also in the care with which the cutting, keeping and picking are done. It is one of the most pleasant branches of horticulture and one of the most remunerative for the capital invested. It has developed fastest of all during recent years and although the constant cry goes up that it does not pay, it continues to develop. The demand for flowers is constantly growing and the laws of demand and supply are inexorable. The daily press devotes more attention to it than to any other branch and this has a great deal to do with its development. That advertisement acts also as a corrective inasmuch as it attracts to the trade people with capital seeking investment where there is certain profit. No one flower has been "boomed" more in recent years in the daily press than the violet. The ease with which it can be grown and the attractive profits resulting from its culture have been alluringly set forth by writers in the daily press, who never grew a violet and knew nothing about the subject. The result has been that many people, particularly women with a penchant for flower growing and a desire to earn "pin money," have gone into the business by the hundreds. Their usual method — following the directions of the daily newspaper horticultural teacher — is to procure sashes and a few hundred plants. The certain result is failure for they cannot compete with the professional grower who is well equipped with knowledge and has an establishment suited for the purpose. The almost unvarying result is failure for these enthusiastic tyros; but they are a disturbing element to the trade. They produce some flowers of a low grade which come in at a time when the crop is most plentiful. They also disturb the equanimity of the professional

grower by their eager appeals for advice. They disturb the seedsman and general florist in the same way, but they do not disturb the equanimity of the daily newspaper, for that institution and the young man or young woman who wrote the articles which were the cause of all the turmoil are too busy following up the political fortunes of rival politicians, interviewing actresses and society leaders, dilating on the fluctuations of copper or "nipper" stock, exploiting the careers of aspiring pugilists, revelling in the mire of the latest scandal, picturing the horrors of the freshest murder, reporting horse shows and horse races, thrilling the dear public with prognostications of impending wars, and so the florist is left to reap the troubled aftermath, while the newspaper goes to fresher fields.

The business end of horticulture represented by the shopkeeper in the large cities is a branch unto itself. Its connection with the producing branches is a very slender one and seems to be growing more attenuated. Why this should be does not appear on the surface to most of us. The fact remains, however, that as a class they hold aloof from the trade organizations when it would seem that their interests would be conserved by affiliating with them. The combination of all branches of trade horticulturists in one organization should inure to the benefit of all. The smaller cities are generally represented in the shopkeeping by the man who is himself a grower and whose wife or daughters "tend store" and make up floral designs. The great shopkeepers in the large cities are "artists" and indulge in fads. They in some cases drop their first names like the ladies' tailors and milliners.

The development of that branch has been wonderful; glass delivery wagons with gold mounted harness and something suspiciously like a crest embossed thereon have become the sign manual of the successful floral artist in the large cities. The addition of "ribbons and laces to set off the faces" of pretty flowers seems a natural accompaniment to the style of business, but it seems inconsistent with the prevailing "natural" style of flower arrangement. It is positively painful to see flowering plants swathed in ribbons and paper or tied up with bow knots like a poodle dog, and it is to be hoped the "artists" will abandon it or their patrons get tired of it very soon.

In horticulture as in everything else, the men who originate either methods or varieties are the men who shape the business, ends and all. The men who hybridize, the men who investigate, the men who do the thinking, are the men who supply the motive power for the whole. The originators of the new varieties of fruits, flowers and vegetables have not only conferred a benefit on the public at large but have made it possible for the grower to continue in a profitable business. The man who first propagated roses in summer and began a special business of mailing them showed the way to dozens of successful imitators. The man who developed the idea of the shallow bench and annual planting of roses for cut flowers was in his way a Columbus. The man who first used large glass and light frames in greenhouses made it possible to produce the quality of flowers in evidence today. The men who built big greenhouses to grow lettuce, tomatoes, cucumbers etc., made a great forward stride. The men who started the first trade journal made an important innovation. The business ends of horticulture are many and various and I trust enough has been said about them in this paper to show to those who may not have considered the matters covered that they are interesting and important, at least to those engaged in them.

Discussion.

President Hadwen said that he had not the slightest doubt that there is as good an opportunity in horticulture today as there ever was.

John Ward said that men now demand the luxuries of life which they did not have in youth. Early tomatoes used to bring from eight to ten dollars per bushel; strawberries from fifty to seventy-five cents per box. The expenses of marketing are greater today. Taxes have increased so that farmers must move back where land is cheap. It is much easier to get help now. Italian women can be relied on. He sells a large part of his crops at the stores in Newton. Any man who keeps his eyes open will find some things that he can do better than others.

Varnum Frost spoke of the armies of pests that we did not have forty years ago. We grew lettuce then without trouble. We had no Colorado beetle or brown-tail moth. Canker worms

will exterminate themselves. He said that apples have deteriorated also Hovey's Seedling and Boston Pine strawberries.

Mr. Smith said he could not go away and leave unchallenged a statement in regard to the Agricultural College. He said one could do no better than to direct an inquiry to it. It must not be judged by its weakest graduate.

Mr. Frost said that he could teach anyone present in five minutes how to grow lettuce as well as he can himself. A man born with nature's gifts need not go to Amherst. He learns more from observation than from any other source. All one needs is common sense and a tenacious will.

Hon. Aaron Low said he thought one must be posted on the means of counteracting the influence of injurious insects.

Mr. Frost spoke of a new enemy to melons. The crop has been a failure the last two years. One crop valued at $6,000 was a total failure. Amherst College experts were employed and recommended Bordeaux mixture.

W. W. Rawson said he would give a good deal today if there had been an agricultural college for him to go to. He has a son who went to an agricultural college, first at Amherst, then at Cornell University. If he had half a dozen inclined toward agriculture they would all go.

Kenneth Finlayson asked the lecturer what part electricity is to play in horticulture.

Mr. O'Mara replied that he had not had any experience in that line. Cornell University has instituted experiments but his recollection was that the benefit would hardly pay. He said he thought the average amount of sunlight provided by the Creator is what the plants need. The more sunlight the plant gets the better, but he did not know about electric light.

Mr. Rawson said that he believed that electric light hastens the flowering of plants. If his Easter lilies and lettuce are behind he knows how to forward them, by this means.

The lecturer told of a farmer who could not write his name who had been most successful. The man who has the ability to apply his knowledge will succeed. If he had been able to avail himself of the sources of knowledge he would have made as much money in half the time.

Everything sent out by the agricultural colleges is not to be taken as perfect.

Market gardening in New England is a safer enterprise than in any other part of the country. Southern market gardeners are not making the money that they do in the north. Transportation eats up all the profits.

It is not good to get too far from the city even if you have to pay more for the land.

Michael Sullivan moved a vote of thanks for the interesting and instructive lecture.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 8, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE METHODS AND RESULTS OF SOIL STERILIZATION.

By PROF. G. E. STONE, Hatch Experiment Station, Amherst.

In general the treatment of diseases in greenhouses demands other methods than those which out-of-door plants are subject to. In the greenhouse the gardener has the conditions largely under his control, whereas he can modify only to a limited extent the conditions out of doors. Many of the troubles with which indoor plants suffer are directly traceable to the conditions to which they have been subject and the gardener must be wholly responsible for them. We are therefore not justified in attributing the cause of such diseases to hard luck and the responsibility must be sought for in the limitations of the gardener's skill and intuitive knowledge. There are some disastrous diseases, however, with which greenhouse plants are affected that cannot be controlled by any amount of skill in handling the crop unless recourse is taken to radical preventive measures. Such is the case where the gardener has to contend with genuine parasites or with pathogenic organisms which will attack a healthy plant just as quickly and disastrously as a weak one. Such diseases are produced by the fungus *Sclerotinia libertiana*, Fckl. which causes the Drop in lettuce and the Timber-rot in cucumbers; the *Rhizoctonia* which

affects lettuce, cucumbers and many other plants; the *Pythium de Baryanum*, Hesse. which causes Damping-off in many seedlings; and the *Heterodera radicicola*, (Greef) Müll., a nematode worm that is known to affect one hundred and eighty or more species of plants and which is especially disastrous, whenever it occurs in abundance, to greenhouse cucumbers, tomatoes, muskmelons, violets, roses, cyclamens etc. It is for the control of these disastrous organisms that the sterilization method is especially adapted, and which all other methods of treatment, except for nematode worms, fail. It is also applicable to the destruction of weed seeds, and the red spider and aphis in the soil are killed. This method of treatment is not a panacea for all plant diseases and it has not been recommended by us for the control of the Damping-off fungus (*Botrytis*), or the Lettuce Mildew (*Bremia Lactucæ*, Regel.), or for other fungi which freely propagate themselves by spores. The application of chemical substances to the soil for the control of pathogenic organisms is not practicable except in some uncommon cases; neither is the fumigation method of much value, as gases are limited in their power of penetrating soils. In some cases freezing or drying the soil is effectual, but it is not easy to freeze soil in the greenhouse without removing it, and that method is too expensive, for at the present time it is far cheaper to sterilize soil than to renew it. The sterilization method is the most effectual and absolute method that can be applied in the treatment of pathogenic organisms. Where the pest is confined to the soil and does not disseminate by spores through the air it can be completely and absolutely eliminated.

Since the time when man first made use of fire to prepare his food, sterilization has been in vogue. It was, however, the brilliant researches of Pasteur and Tyndall that annihilated the theory of spontaneous generation and gave us the correct understanding of the rationale of sterilization, and the intermittent method suggested by the latter has been universally employed by bacteriologists.

Heating the soil for the purpose of ridding it of obnoxious organisms has been tested in a limited way for some years and pathologists have frequently made use of pots of sterilized soil where certain experiments demanded such treatment. Among the

first attempts to sterilize soil on a large scale in this country was one in connection with nematode worms on roses, cucumbers etc. This method was practiced in 1895 or 1896 by some florists who were so troubled with nematode worms that a successful attempt was made to treat the soil on a large scale with steam.

The treatment of soil by heat, or sterilization as it is called, has been carried on at the Hatch Experiment Station, Amherst, for some years in connection with troublesome organisms which thrive in the soil and prevent the production of healthy crops. It should be borne in mind, however, that when we speak of sterilization of the soil we do not mean absolute sterilization, but what we actually accomplish is a sort of Pasteurization or partial sterilization; in other words, our soil is sterilized so far as the presence of some obnoxious organism is concerned. Cultures of soil treated with steam which attained a temperature of 212° F. would show a considerable bacterial flora, and the subsequent and continual exposure of the soil to the air and the application of water will enable the soil to become subsequently supplied with a host of organisms which are beneficial, indifferent or otherwise. In order to obtain absolute sterilization and maintain those conditions we would have to make use of the methods employed by bacteriologists. Absolute sterilization we do not desire; and all that it is necessary to accomplish is to destroy the obnoxious pests which cause damage to the crop. A uniform temperature of 180° F. maintained for a short time would accomplish this, but in practice it is far better to exceed this temperature in order to be on the safe side.

During the past year quite remarkable strides have been made in the practice of sterilizing soils. We will now consider some of the methods and results of sterilization. On account of the extensive use of the sterilization method upon a large plan by the most efficient and practical market gardeners the process has been made very much cheaper and quickened to a considerable degree. There have been numerous methods and appliances devised that are great improvements over old ones. In the past year the amount of soil sterilized can be more intelligently estimated in acres rather than in square feet. At the present time whole ranges of greenhouses are being treated and the method has been employed out of doors to some extent.

We have been able to test a great many sterilizing appliances and have looked into the efficacy and practical utility underlying the various methods which have been in vogue. The method of treating the soil by steam to a distance of a foot or more in depth has always appeared to us as the best one to be employed, and, since the cost of such treatment has been greatly reduced of late there appears to be no longer any reason why it cannot be extensively used. The practice of applying one or two inches of treated soil to the top of the bed, while giving good results, has its drawbacks because the process has to be repeated, in order to be of any value, every time a crop is planted. The cost of treating one foot or more of soil in badly infested houses proves an excellent financial investment: for example, some houses have had the Drop in them to such an extent that fifty per cent of the plants would succumb and in some cases nearly the whole crop has been destroyed. In our own experimental house which was purposely contaminated with Drop a few years ago we have experienced a loss in some cases equal to about ninty-nine per cent. In a house containing four thousand dozen plants at fifty cents per dozen the value of the crop would be $2,000, or at twenty-five cents per dozen $1,000. The loss of fifty per cent would reduce the value of the crop to $1,000 or $500 respectively. Such a loss is the more provoking inasmuch as the maximum amount of Drop occurs about the time when the plants are mature and all the labor bestowed on the crop in transplanting, care given to the same, amount of heat utilized, and the valuable space which they have taken up is all for nothing. A house of this description was sterilized during the past winter at a cost of $100, and in examining this crop (which was one of the most perfect I have ever seen) there was only one case of disease in the whole house. This one diseased plant occurred near an iron post that supported the house and there was evidently a small portion of the soil there which had not been sufficiently treated. The cost of treating this small neglected area, however, would be very insignificant. When we observed the crop it had already been mature for nearly two weeks and was being held back for a better market which gave an excellent opportunity for any further Drop to develop if it were present. There appears to be no reason why, if a house is once treated in a manner as thoroughly as this house was, that another treatment

would not be required for some years, provided care is taken to prevent recontamination from refuse material which contains the Drop fungus. Even allowing a few contaminating areas to exist in the soil as a result of imperfect treatment it will probably be five years before the loss would again reach that amount where it would be necessary to treat the soil. It requires no argument to show that the expense of $100 for treatment in a house that would be worth $2,000 at fifty cents per dozen or even $1,000 at twenty-five cents per dozen is a good investment, even if the treatment has to be repeated each year; but on the basis of a five-year treatment which is in our estimation all that is required the investment is nearly five times as good. The increased value of the soil and the possibility of having less weeds and fewer aphis should also be taken into consideration in estimating the benefits derived from the use of this method. One experiment of this kind is sufficient to convince the most conservative market gardener of the practicability of sterilization.

The methods employed for heating the soil have been either by the use of hot water or steam with considerable variation in the mode of applying the latter. Messrs. Hittinger Bros. of Belmont have made extensive use of the hot water method and their later constructed houses have special facilities for applying this in the most economic manner. The hot water method requires the treatment of the soil previous to the putting in of each crop as only a few inches of the surface soil are sufficiently heated by this method to kill the mycelium of the Drop fungus.

The heating by steam is now done largely by the aid of perforated pipes and in some cases use is made of two-inch porous tile, although this method is not so practicable. If finely perforated tile could be obtained in the market at a reasonable cost their use would be of much more value for this purpose than at present. The various contrivances made out of perforated pipe varying from one inch to three inches in diameter and usually placed from seven to twelve inches apart are made up into frames from ten to twenty feet or more in length and into any desired width. The size and number of the perforations vary much in different appliances. Where they are rather large (one-fourth inch) they are frequently covered with burlap. In some appliances the perforations are one-fourth inch in diameter and are only one and one-half inches apart

each way; in others the perforations may be only one-eighth inch in diameter and from three to six inches apart with two or three rows of such holes extending along the pipe. Some of these appliances are not made up into permanent frames but are in sections easily put together or taken apart and are so constructed that they can be readily extended to any length or width desired. These forms are provided with headers placed transversely which are pipes of larger diameter containing perforations, and nipples are inserted at intervals which readily fit into the extension pipes. In some instances the headers are placed at each end, thus forming with the extension pipes a frame composed of a series of rectangles. In this form a complete circulation of steam can take place through the apparatus. In others the headers are in the middle and the extension pipes lead off into opposite directions. In the latter case the ends of the extension pipes are plugged with wood and no circulation of steam takes place. A form of sterilizer recently devised and advertised by Mr. G. M. D. Sargent of Belmont is built after the manner of a harrow. It consists of an iron frame eight feet long by four feet wide with twenty perforated hollow iron tubes corresponding to the teeth of a harrow which are thrust into the soil. The material most frequently used in these various forms of apparatus is iron pipe. The apparatus used and devised by Mr. Cartter is constructed out of perforated galvanized-iron tubes and is very light and easy to handle.

The methods generally adopted by lettuce growers in heating their soil is to place the sterilizer on the surface of the bed. If the bed is twenty feet wide then it would be most convenient to have the sterilizer ten feet wide and twenty or thirty feet long. This is placed midway in the bed and the soil to the depth of one foot or more is dug up on either side and thrown on top of the sterilizer. The steam is then turned on and the soil heated. After sufficient steaming has taken place the pipes can be pulled out and made ready for the next treatment. The soil previously treated is covered up with old canvass and allowed to stand some hours, after which the top portion is shoveled back to where it was taken from. Not only is the one foot or fifteen inches of top soil heated by this method, but the soil underneath the apparatus is equally well sterilized, providing too much haste is not made in removing the

treated soil. In one case that was examined where the steam was left on late in the afternoon for one and one-half hours and the top foot of soil not disturbed until the next morning we obtained the following records of soil temperature at noon on the succeeding day, or nineteen hours after the steam was applied, and five hours after the top soil and apparatus had been removed. The temperature of the soil two feet below the surface was 120° F. and one foot below the surface was 175° F. In this instance two masses of top soil were heated, the last one being left undisturbed over night. The average pressure of steam was only thirteen pounds and it always astonishes those who heat soil for the first time to find that steam can penetrate such a distance below the surface in so brief a period.

Cost of Sterilizing Soils.

In proportion as the appliances have been improved for sterilizing soil the cost of application has been greatly reduced. From reliable estimates which we have been able to obtain from practical lettuce growers and others who have heated their soil, the cost including coal, labor etc., but not the cost of tile or apparatus used, is as follows:—

In a house two hundred and twenty-five feet long by twenty feet wide, one-third of which was treated at a time by steam passing through two-inch tile placed eight inches below the surface and one foot apart and forming a continuous circuit, the cost was at the rate of sixteen dollars for one thousand cubic feet, where a pressure of steam was used varying from thirty to eighty pounds. The heating was continued day and night as this could be readily done on account of a night foreman being employed. The estimated cost of removing the soil from a similar house to a depth of one foot and placing in new soil without carting the same was at the rate of thirty-seven dollars and fifty cents per one thousand cubic feet. This house had been previously sterilized, but with less favorable results, by the same method except that the tiles were placed eighteen inches apart instead of one foot.

Another house forty by three hundred feet was treated by a lettuce grower with an average pressure of thirty pounds of steam passed through one-inch iron pipes furnished with a series of perforations six inches apart and three-sixteenths of an inch in diameter. The

iron pipes were made up into a frame and each pipe was seven inches distant from one another. The estimated cost for sterilizing one thousand cubic feet of soil based upon the treatment of the whole house was $8.33.

A lettuce grower who has a range of eight houses each being about three hundred feet long and thirty-six feet wide has recently treated them all by steam with the aid of a new forty-horse power boiler used exclusively for the purpose of sterilization. The sterilization apparatus consisted of a series of one and one-half inch iron pipes which were ten feet in length and were made up into a frame twenty feet long by about eight feet wide. The apparatus was placed on the surface of the soil and the earth from each side to the depth of one foot was shoveled on to it. The cost of this apparatus was about $20. Mr. C. W. Learned who devised it thinks that he could make a duplicate of it for about $17. In this instance it took three days to treat a house three hundred feet by thirty-six feet and from the estimated cost of labor, fuel etc., the treatment was made at a rate of $5.92 per one thousand cubic feet. The price paid for labor in this instance was one dollar and fifty cents a day.

The sterilizing machine used by Mr. Cartter is made out of two-inch galvanized twenty-ply iron tubing with one-fourth inch holes one inch apart each way. The headers are two or three feet long and are made of the same material and perforated. Galvanized iron nipples are soldered on the sides of the headers six inches apart. The ten-foot length pipes are made to fit over the nipples and also into one another so that any desired length or width of sterilizer can be obtained. This apparatus contains more perforations to the linear foot than any we have seen and for this reason and owing to the diameter of the tubing used it is most effectual as a heater. We observed one test with this sterilizer in which four hundred cubic feet of soil were heated at the rate of $2.00 per one thousand cubic feet. This includes the cost of labor at ten cents per hour, which was required to place the apparatus in position and cover it with soil ready for use, also the amount of fuel burned during treatment, together with the amount of coal it required to bring the same amount of water in the boiler to the same degree of temperature and the steam to the same pressure as before the treatment was started.

Mr. W. W. Rawson claims that it cost him $50 to sterilize a house three hundred by forty feet which would be at the rate of about $4.16 per one thousand cubic feet. This is undoubtedly a very fair estimate of what it costs to sterilize soil when undertaken on a large plan.

Mr. Sargent maintains that two men can sterilize a house one hundred and sixty by forty-five feet with his apparatus in three days. Assuming that it will take forty-two cents worth of coal to heat one thousand cubic feet of soil together with the labor required in setting up the apparatus it would cost about $1.66 to sterilize one thousand cubic feet. This is assuming that the boiler is already in operation for heating the houses and a fireman is employed to run it. It should be understood that there is no shoveling of the soil required with the use of this sterilizer, hence we should expect a saving of expense. When soil can be sterilized at $2.00 per one thousand cubic feet or even at $5.00 there is no longer any question concerning the practical application of this method in green houses for the extermination of some of its worst enemies which interfere with the production of healthy and profitable crops. Even where the cumbersome tile method is employed, the cost of sterilization is less than one-half what it costs to remove the old soil from a house and supply it with new.

Results of Sterilization.

It is not possible for us to give an adequate estimate in dollars and cents as to the amount of money that has been saved by the practice of sterilization, as we do not know the amount of loss experienced by floriculturists and market gardeners in this State due to infested soils. The value of any method of treatment will not be considered for one year alone but for a period of years in order to obtain an idea of its full significance. As a rule lettuce growers have suffered a loss of from fifteen to fifty per cent from the Drop alone and in some instances even greater losses have taken place. There are, however, other beneficial results derived from the practice of sterilization other than those of ridding the soil of disease producing germs. Some market gardeners have practiced sterilization for three years, not wholly for the sole purpose of ridding the soil of certain disease producing organisms, as that can be accomplished by one treatment when properly done,

but largely for the purpose of increasing their crops. We have made many experiments with various crops in which the growth of plants in sterilized soil was compared with the growth of the same species of plants in precisely similar earth not sterilized. The effect of sterilization is quite marked in such experiments.

Mr. W. W. Rawson, one of our largest lettuce growers, who has observed the effect of sterilization on his own crops for three or four years declares that he would rather have one inch of sterilized soil on his beds than any fertilizer which he has ever used.

For the purpose of determining on a larger scale than we had heretofore shown the effect heating the soil had upon the acceleration of a crop of lettuce we grew a crop from the seed to maturity in sterilized and unsterilized soil. The results showed a gain of thirty-three per cent in weight in favor of the sterilized plats. Plants grown in sterilized soil are always lighter colored, more tender and it is not a difficult task for an expert to pick out such plants in the market. Neither is it difficult to ascertain from market specimens what temperatures lettuce crops have generally been subject to. In houses where the soil has been treated twice the difference in the color of plants is very marked indeed showing that the prolonged heating of the soil is much more favorable to the growth of the plant than a brief period of heating.

There was two and two-tenths per cent more water in those plants grown in treated soil than in the untreated as well as a corresponding decrease in the unburned residue representing organic matter, ash constituents etc. From the color and texture of the lettuce grown in sterilized soil this might be expected.

A gain of thirty-three per cent in the growth of the crop is in itself worthy of consideration, so much so in fact that as already stated, many gardeners practice sterilization for the production of larger crops. This means that a crop of lettuce when four weeks old is equal to one six weeks old as ordinarily grown, at least such are the results which we have obtained in our experiments, and lettuce growers have related similar experiences. A great many tests have been made by us on various plants all of which show practically the same accelerating effect in growth and development as a result of sterilization. If one can turn out a crop as fully matured in four or four and a half weeks owing to sterilization as he can ordinarily in six and six and a half weeks without steriliza-

tion then it is evident that there is considerable saving in the method.

There are still opportunities for practical gardeners to improve the appliances for sterilization which will render the operation more efficient and reduce its cost.

Discussion.

W. W. Rawson said he had been very much interested in the lecture. He had consulted Professor Stone, who first brought the subject of sterilization to his notice, many times. He began to practice sterilization about four years ago; he began in a small way with a cartload of sterilized soil. He first spread an inch of sterilized soil on the surface of his beds; later two inches, and he now sterilizes all the soil used. He has sterilized the soil in thirty-four houses and fifteen hundred hotbeds. The subject is yet in its infancy. Sometimes after sterilizing the soil very fine crops will at first result, while the second and third crops will be poor, but this, Mr. Rawson contends, is due to poor management of the crops and not to sterilization. Mr. Rawson uses two-inch perforated pipe, thirty feet long. His men put them in while the steam is getting up. He can use each sterilizer two or three times a day. He considers the time and money well expended. If he had to spend $1,000 a year in sterilizing he would do it, but he thinks it will be necessary only once in three years. He considers sterilization one of the most important subjects in connection with his business. In his floral department he sterilizes all the soil used in pots. He has not compared his crops with those grown in unsterilized soil because he has none.

Professor Stone said that all the experiments he has seen show a wonderful penetrative power in the steam. The soil should be left undisturbed for a number of hours after sterilization and the heat will gradually work down. The greater the pressure of steam the more effective will be the sterilization. He would like a pressure of steam of at least fifty pounds to accomplish good results.

George D. Moore said he had two houses of lettuce, one sterilized and the other unsterilized. The lettuce in the unsterilized soil was the best; that in the sterilized soil grew more rapidly and did not head so well.

The lecturer said that Mr. Wolfe of Worcester sterilized his house of cucumbers and produced an average of one hundred and fifty-five number one cucumbers to a plant, but it was not all due to sterilization. He has a very fine strain of seed which he produced himself. The foliage has a great deal to do with getting good fruit. You cannot obtain good cucumbers without good foliage; ninety-five per cent of the plant food comes from the air by means of carbon assimilation taking place in the leaves. It is well known that when we heat soil the humus compounds or organic matter is more available. Heating the soil may drive out old gases. It is possible by judicious management to control the plants so that they will not grow too rapidly. Sterilization affects only those disease producing organisms which are in the soil such as Drop, Rhizoctonia, eel worms, and one of the damping off fungi, Pythium, but the common damping off fungus Botrytis which attacks geraniums, cannot be controlled by sterilization. Nematodes or eel worms are closely allied to the worms seen in vinegar and in paste. They do not live out doors in our climate at least through the winter. In the southern states they attack various economic trees and their control in that latitude is a difficult matter. They injure muskmelons much more than cucumbers. It is very difficult to control them there.

Joshua C. Stone asked why it is that one man will have diseases of every kind in his greenhouse, while his neighbor will run his for ten years without disease of any kind.

Professor Stone said that perhaps the man needed sterilizing. Some men can go into a greenhouse and see with an instinctive glance just what it needs. Diseases are communicated by exchange of plants. One grower in Springfield has never had certain diseases because he has never exchanged. We are going to have more of this trouble with plant diseases as soon as our commercial intercourse increases.

Varnum Frost said he thought many troubles might be attributed to continuing crops on the same soil year after year.

A vote of thanks was passed for the interesting and instructive lecture.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 15, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

FUNGOUS DISEASES OF FRUITS.

By PROF. M. B. WAITE, Dept. of Agriculture, Washington, D. C.

The diseases of fruits may be divided as to their cause into two great classes, parasitic and non-parasitic. The non-parasitic class includes diseases induced by bad soil, too high temperatures, too low temperatures, too constant temperatures, sour soil, bad drainage or excess of water, resulting in asphyxiation, alkalies, organic acids or other poisonous substances in the soil, poverty, drought, sun-scald, mechanical injuries, and all such causes. It further includes physiological disturbances within the plant itself, as well as the disease called chlorosis, by which the plant fails to take up iron although the soil is abundantly supplied, and diseases of nutrition caused by over feeding; also those of an enzymic nature, by which the plant loses control of its enzymes or vegetable ferments.

Turning now to the parasitic class, there are two main divisions, the animal and the vegetable parasites. Among the animal parasites are Nematodes or eel worms, Phytoptus and other mites, and the great family of insects. The sucking insects, gall producers and scale insects are intimately associated with the plant itself, and are typical disease producers. It is a question whether the work of the larger leaf-eating and feeding insects should be classed as disease, for it is only a step from this to the depredations of birds, mice, rabbits or even cattle.

The vegetable parasites of plants belong almost wholly to the great class of fungi, whose species, both parasitic and saprophytic, probably equal in number all other plants. The mistletoe, a flowering plant, is parasitic on the pear and the apple, producing a disease of these trees. Some algae, or even lichens, may be classed as disease producers, but practically all the vegetable parasites of fruits belong to the fungi or their very close allies, the bacteria. The number of the diseases of plants

produced by fungi is also very large. It is not rare at all for native plants to have as many as a hundred such diseases. The grape has fifty fungous diseases, and the apple in this country alone has thirty-five at least.

Disease, in its broadest sense, has been defined so as to include every possible unfavorable factor entering into plant life, and the origin of the word *dis-ease* lends some color to this definition. On this basis we should find very few healthy plants, and using this broad definition it would hardly be possible on theoretical grounds, to have a healthy plant. Professor Bailey has aptly stated that every plant has within it the potentiality of developing far beyond what is reached in ordinary cultivation. We know this is true, for as methods of growing plants are perfected, we see specimens under particularly favorable culture, reach still higher and higher development. The classification of diseases above given may seem to include an unnecessary variety of causes, but it is none too broad, for I am certain that within the past season in my orchard work I have seen repeated examples from every one of the causes mentioned. In fact, with a few exceptions, I have seen disease from all these causes in a single day's trip.

The ordinary conception, however, of disease in plant life is somewhat more restricted than above given. Disease may be defined as a condition of the plant by which it is rendered partially incapable of responding to its environment. By environment, is meant conditions of light, temperature, moisture, physical and chemical condition of the soil, in other words, the ordinary atmospheric and soil conditions. The gardener will say that a particular plant is not diseased; it has only met with an accident and will soon recover and grow thriftily again. On the other hand, this choice plant refuses to grow in spite of the most perfect cultivation, pruning, watering and adaptability of soil and climate. It therefore must be sick. This more restricted definition would exclude the ordinary direct effect of unfavorable environment, as well as injuries by feeding insects, birds and animals. It would include all physiological, enzymic and nutrition disturbances within the plant itself, as well as parasites which are intimately associated with the plant tissues, and is, I think, the definition more commonly in the mind of plant cultivators and orchardists.

The foundation for the study of the fungous diseases of plants was begun by the early mycologists more than a hundred years ago, and the work in systematic mycology during the past century has very greatly aided the study of modern pathology. Even the mere classification and naming of the species of fungi have been necessary for a complete understanding of the subject. This classification and nomenclature and the work of de Bary and his pupils on the life history and biology of the fungi have been the basis for modern pathological work. In fact, the biology of the fungi, taken in connection with the progress in the study of plant physiology, has made plant pathology possible. The mycologist studies fungi for themselves, though they may be parasitic and live on a host plant; yet he regards the fungus as the important thing and the host plant, from his standpoint, is useful only as a support to the fungi. The plant pathologist, however, turns his attention to the higher plant rather than to its parasites, and studies the parasites mainly in their relation to the host plant. Plant pathology is really quite a new science, in fact, scarcely more than twenty-five years old, and the knowledge of the treatment of plant diseases has grown up almost entirely within the past fifteen years. The results of investigations of plant diseases have been so satisfactory that the more these subjects have been studied, the greater has been the demand for still further research. The number of investigators is large and the amount of work now being done on this subject is very great and is rapidly increasing. It is a satisfaction to know that our own country leads the world in this line of investigation. Our universities, State experiment stations, and the United States Department of Agriculture, combined, are doing quite as much work as any other two countries, perhaps as much as all the rest of the world. The Department of Agriculture has just about doubled its corps of investigators of plant diseases within the past year. Not only have investigators been active, but the cultivators of plants, especially the fruit growers, the horticultural press and horticultural associations, have taken up the study of plant pathology energetically.

The word "fungicide," which was only coined in 1886, "Bordeaux mixture," "Monilia" and other technical names of fungi, are now common every-day words to the progressive fruit grower. It was an easy matter a few years ago for a mycologist to lecture to

an audience like this, for all his common knowledge was new to his hearers. In taking up the study of some of the more important orchard diseases, I will endeavor to give the principal facts concerning them, and especially their treatment, but fear, however, that much of the information which I can impart is already known to you.

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*Pear leaf blight, caused by the fungus *Entomosporium maculatum*, produces small round spots on the foliage and causes the leaves to drop early in the season. It also produces ugly hard spots on the fruit, frequently causing it to crack open. It is readily preventable by spraying with Bordeaux mixture, about three treatments being necessary on orchard trees. The first should be made as soon as the foliage is well out, about three weeks after the bloom sheds, and the other two at intervals of ten days to two weeks.

The quince spot and leaf blight of the quince is caused by the same fungus and is preventable by the same treatment. However, the first treatment should be slightly earlier in the case of the quince. Pear stocks and quince stocks in the nursery suffer severely from defoliation caused by this fungus. The treatment in this case should be more complete, the first spraying being made as soon as the earliest leaves are expanded, and about six treatments are necessary at intervals of ten days to two weeks.

Apple scab is one of the well-known pests of apple orchards, especially in the North. It is caused by the fungus *Fusicladium*. An allied species produces the pear scab, a similar disease of the pear. These diseases are also readily preventable by spraying with Bordeaux mixture. The treatment, however, should begin early in the season, as soon as the buds have burst from the cluster and exposed the individual flower buds. About three to five treatments are necessary.

The bitter rot of the apple is a very serious pest in Maryland, Virginia to Missouri and southward. While scab is particularly bad toward the North, bitter rot takes its place toward the South. The treatment for bitter rot should be about the same as for apple

*The portion of the lecture which follows was given from a large number of lantern slides thrown on the screen. As the pictures cannot be reproduced, only an abstract is given.

scab, but the results of spraying have not always been satisfactory. In the mountains of Virginia, both bitter rot and apple scab occur, the latter attacking the Winesaps, while the former attacks the York Imperial and Newtown pippin.

Canker is the term applied to several diseases which attack the bark of apple, pear and other fruit trees. This type of disease can usually be prevented by spraying with Bordeaux mixture. Where it has already appeared on the trees, it should be cut out as much as possible, the wounds, where large, coated with paint or liquid grafting wax, and then the trees thoroughly sprayed in early spring until they are blue with rather thick Bordeaux mixture.

The fly-speck and smut fungi, which cause such a bad appearance of the apples in the Tidewater region of the Atlantic Coast, especially in the Middle States, are very easily preventable by treating with Bordeaux mixture. The treatment outlined for apple scab and bitter rot is very efficacious.

The black rot of the grape still maintains its position as the most serious pest of this fruit over a large portion of the country. The destruction wrought by it in the Niagara vineyards of North Carolina this last season was almost complete, and the Delawares were seriously injured in spite of more or less spraying. No diseases, however, have been more thoroughly demonstrated to be susceptible to treatment than the black rot and mildew of the grape, although we regret to say that the annual losses from these diseases still continue to be large. The first treatment should be made with Bordeaux mixture just as the buds are swelling. The second treatment may be made when the grapes are in bud, a third just after the fruit has set, and the fourth and fifth at intervals of ten days to two weeks. If spraying is deemed necessary after the fruit is from two-thirds to three-fourths grown, the ammoniacal solution of copper carbonate should be used instead of the Bordeaux mixture to avoid discoloration of the ripe fruit.

Pear blight is one of the most destructive pests of pomaceous fruits. It is caused by the microbe *Bacillus amylovorus*, one of the bacteria. This germ works in the blossoms, young fruits and fleshy bark, killing these tender succulent tissues and resulting frequently in the death of the entire tree. The disease enters the tree normally through the nectary of the blossom, and is carried from flower to flower and from tree to tree by bees and other insects

which are visiting the flowers for their nectar. It also enters the tree through the tender tips of young shoots, but even here insect punctures and insect distribution is probably necessary. The tree resists the inroads of the blight quite strongly, and in a majority of cases successfully, the resistance depending on a number of different factors. In the majority of cases of infection of pear blight, the blight dies out completely during summer time. In a few cases, however, the disease gets into the fleshy bark of the limbs or body and remains alive over winter. These cases, which I call hold-over blight, start the infection on the blossoms the next spring. The remedy for pear blight consists especially in cutting out the hold-over blight in the fall of the year. The work should be done very thoroughly and carefully, cutting from six inches to a foot below the lowest discoloration. The trees should then be examined very carefully the next spring just before the blossoms open to be sure that no cases have escaped attention. Cutting out during spring or summer when the foliage is on is beneficial always, but may not necessarily be effective in eradicating the pest. About two to three weeks after the blooms have shed, is an important time to inspect the pear orchard for blossom blight, and the prompt removal of a few cases at this time may be very beneficial. In cutting out blight always carry a sponge or piece of cloth and a solution of corrosive sublimate one part to two thousand. Wash over each wound with this solution and wash the knife or saw frequently with it.

Peach yellows is one of the most serious diseases of the peach and has utterly eluded all efforts by scientific men to find out its cause. There are many things, however, known about the yellows which are important to the orchardist. The disease is a communicable one, spreading rapidly from tree to tree and from orchard to orchard. The method of communication is not known, but it may be artificially communicated by budding from diseased trees. As no such process normally takes place in the orchard, there must be some other way by which the disease is transmitted. The disease behaves like a contagious parasitic malady, but no germ or microbe has ever been found. Strange to say, the disease can be prevented as thoroughly and satisfactorily as any known plant disease, although the common opinion of horticulturists is to the contrary. By promptly removing trees at the very first ap-

pearance of symptoms of the disease, it is possible to keep it entirely in control in an orchard or in a region. The first symptom of the yellows consists of the spotting and premature ripening of the fruits. These premature peaches are very striking in appearance and very easily detected, and should always be considered a cause for the prompt removal of the tree. Later the tree assumes a yellow cast of foliage and bushy, wiry, yellow sprouts are produced, and, if the tree is not dug up, it dies after three to five years. There is a great demand in the localities where this disease is prevalent for some one to find out the cause of the yellows, and yet it is very doubtful if any better treatment could be found than the eradication method now very well known. The difficulty with this, however, is to get people to put it into execution.

The rosette is a very similar disease to the yellows but is restricted to the South so far as is known, it being limited mainly to the State of Georgia. This disease is very much quicker in its action than the yellows. The first symptoms appear in the spring, and frequently the trees are dead by August and never survive the year.

The little peach disease is a comparatively local disease in Michigan and New York State, but is very severe in a few localities. The main symptoms of little peach are the reduced size of the fruit, the belating of the fruit, the yellow color of the foliage without apparent cause, the diminution of twig growth, and finally the gradual death of the tree, limb by limb. Careful investigation of this disease has shown it to be distinct from the yellows and rosette. It is thought to be due to a root parasite, a minute fungus growing on the feeding roots.

The Monilia fungus, causing the rot of peaches, plums and other fruits, is one of the worst pests of the stone fruits. This fungus is greatly favored by wet weather and does an enormous amount of damage in the Atlantic Coast States from New England to Florida. The past season it was particularly destructive from Maryland southward to Georgia. By far the larger part of the early peach crop of Georgia was destroyed by it, and in some orchards in Virginia the entire crop was taken, both early and late. It largely disappears when long periods of drought occur at the ripening time. Persistent efforts have been made by a large number of investiga-

tors for the past five or six years to treat this disease by spraying. Various fungicides have been employed, and different times and numbers of treatments have been used. The results, we regret to say, have not been satisfactory. There seems to be but little trouble in preventing the Monilia, at least greatly reducing it in an average season, although in a very wet season this part of the program cannot always be fully carried out. The main difficulty comes from the injury to the peach trees by spraying. Bordeaux mixture sprayed on apples, pears, quinces, and also on potatoes and many other plants has a distinctly beneficial effect on the plant aside from its fungicidal value. It increases the amount of chlorophyll, making the leaves darker green, and enables them to stand more drought and heat. They persist longer on the plant and do more work. In case of the potato at least, they assimilate more starch. There are probably minute amounts of copper salts absorbed into the leaves, producing this beneficial or tonic effect. On the other hand, the peach and the Japanese plum, as well as the violet, bean and some other plants, are injured by the copper spray. These plants probably absorb a large amount of the dissolved copper salts in their foliage. At any rate, their tissues either contain some substance on which the copper acts injuriously or are so constructed as not to withstand its toxic effects. The injuries to the peach by Bordeaux spraying are of two main types: first, the shot-hole and corrosive effect on the young leaves; second, the defoliating effect. The shot-hole and corrosive effect is first noticed and occurs shortly after spraying but does not increase to any extent after the spraying has ceased. The defoliating effect may not begin until two or three weeks after spraying and then gradually increases until the entire trees are bare, resulting in poorly colored, insipid fruit or, in some cases, in its being dropped from the tree. There will be many experiments tried on this disease during the coming season, including some by the Department of Agriculture, in the hope of getting a treatment that will not only kill the fungus but will not injure the foliage.

As far as we know at present, Bordeaux mixture can only be applied to the peach with safety before the leaves are out in the spring. After the foliage is out this spray should be used with caution. If peach foliage is sprayed at all with Bordeaux mixture,

instead of the standard formula of six pounds of blue-stone to four pounds of lime, a dilute formula should be used containing an excess of lime, namely, three pounds of blue-stone and nine pounds of lime to fifty gallons of water. Copper acetate and the ammoniacal solution of copper carbonate have both proved very severe defoliators in my experiments. We shall try several other fungicides this year, including sulphur compounds, in the hope that one can be secured which will prevent the Monilia without injuring the foliage.

The peach-leaf curl is one of the few fungous diseases of the peach that is easily preventable by spraying, for the reason that the spraying in this case is done just as the buds are swelling. Ordinary standard Bordeaux mixture should be used for the purpose.

Strawberry leaf blight is a very troublesome disease with many growers, although efforts to prevent it have been very successful by the selection of resistant varieties, thorough cultivation and renewal of the beds. However, it can be prevented by spraying, if it is so desired.

For direct spraying on the plants there is no fungicide at all comparable to Bordeaux mixture in the great majority of cases. For certain purposes, as for instance, the later sprayings of grapes and other fruits, the ammoniacal solution of copper carbonate can be substituted for it, but it never quite equals the Bordeaux in efficiency. For some fungi, notably the surface mildews, a solution of potassium sulphide, or liver of sulphur, seems to be more efficacious. Bordeaux mixture represents the highest type of a fungicide, not so much from its killing power on the fungi as for its harmlessness to the host plant. It is not equal as a disinfectant or germicide to copper sulphate or any of the soluble copper salts, to chloride of lime, formaline, corrosive sublimate, or such poisons. There is a great deal of very bad Bordeaux used in spraying, and it is possible to mix the blue-stone and lime in such a manner as to make vast differences in the mixture. The correct Bordeaux mixture should be sky-blue in color, of a very fine grain, and should settle very slowly. The copper must be completely neutralized by the lime. To make good Bordeaux, it is usually best to prepare stock solutions of both the lime and the copper sulphate, containing one pound to a gallon of water in each case. To make, for instance, fifty gallons of Bordeaux, dilute the

lime with twenty-five gallons of water and the blue-stone with an equal amount, and pour these quickly into a third vessel, stirring rapidly. The quality of the lime is very important. A good grade of stone lime should be used which will slack up evenly into a fine paste, and will dilute into a smooth, creamy mixture. For the purpose of more readily mixing the lime and blue-stone solutions, I have devised several arrangements by which the two can be diluted in barrels or tubs and then run by gravity through a rubber hose into the receptacle. Standard Bordeaux mixture should contain six pounds of blue-stone and four pounds of lime to fifty gallons of water, and is known as the 6-4-50 formula. Strong Bordeaux may be made with half the amount of water for spraying in winter time on dormant trees. For spraying peach foliage, dilute Bordeaux containing three pounds of blue-stone, nine pounds of lime and fifty gallons of water is to be preferred. This will be known as the 3-9-50 formula.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 8, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE INFLUENCE OF AMERICAN EXPOSITIONS ON THE OUT-DOOR ARTS.

By WARREN H. MANNING, Boston.

Ostensibly World's Fairs are promoted to enable all countries and states to display to many people their natural advantages and resources in such a manner that colonists and capitalists will be induced to develop them, to enable manufacturers and other producers to extend trade by showing their products, to display works of art and the results of sociological, philanthropic, and religious efforts, and to bring together in conference the representatives of all such activities for an exchange of ideas and mutual acquaintance. Really World's Fairs are promoted to "boom" a city and to induce our national and other governments to put money into the coffers of local merchants. Local sub-

scriptions are invariably solicited on the ground that the fair will draw a certain number of visitors, each one of whom will leave a specified sum of money of which each local contributor must surely gain some part. Each exposition is followed by a local contention as to whether the city was or was not benefited, on the whole, by the undertaking. Presumably the division of opinion lies between those who did and those who did not receive what they regarded as a fair share of the governmental and individual contributions to the city's welfare, with a sprinkling on the one side of those of the real workers to whom the honors they received were not enough to offset their labors, and on the other side of those whose vanities were pleasantly tickled. In any event it is safe to say that no city once having gone through the throes of a World's Fair will attempt another in this generation, even if it were possible to again induce a paternal government to lay a few million dollar eggs in the exposition nest.

It is of course difficult to trace the direct results of an exposition. A city probably receives directly from the exposition more money than it actually expends, but indirectly the loss is probably much greater than the gain. Many of the "boomers" of the fair have little to lose and much to gain. The substantial and far-seeing citizens are compelled to contribute time and money from a feeling of loyalty to their city. They know that without such contributions the fair would be a failure. Many of them know, too, that the same amount of money and energy expended upon the improvement of the city, the improvement of the condition of the people and the development of its industries and resources would result in an infinitely greater permanent gain. They know that much local capital will, in view of the fair, be tied up in undertakings from which no return can be hoped for a long time after the fair closes, and, furthermore, that the exposition will lead capitalists to invest money in other localities that otherwise would be invested at home.

This, of course, is the selfish point of view, but it is, we believe, the point of view that will result in defeating, after the St. Louis Exposition, any further attempts at a great World's Fair for a long time, unless it may be at the national Capital, directly under the auspices of the United States government with periods of special interest and special transportation facilities

and rates to draw citizens from all parts of our own and foreign countries. At Washington there is and always will be the best representation of the country's resources arranged in the most instructive manner. It is likely that there will continue to be local expositions in which local resources will be effectively displayed. If they could be in a sense outposts of a great permanent exposition at Washington which could establish traveling exhibits for their benefit, they would be of far more permanent value than the theatrical outbursts of local pride represented by the quarter century exposition period that is passing by. However much or little cities may be advancing their own interests by holding expositions, I think there can be no question as to their value in promoting the welfare of the nation as a whole as long as they are given a distinct educational value and can draw large numbers of visitors to profit by the lessons they teach. If it were not so there would be no justification of national appropriations.

It is of course difficult to trace or measure with definiteness the results of a World's Fair. Every one of the millions of visitors to our great expositions must, however, have been quickened intellectually by what they saw and morally, too, if they kept away from the midways. Surely the Court of Honor at the Chicago Exposition was a dream of beauty that could not fail to lift all thoughts and aspirations to a higher plane. Many people needed such an incentive to draw them from their homes and give them the broader outlook that travel alone can impart.

The bringing together of widely separated men and women representing all the activities of a nation, or of the world, in organized conferences or even in accidental meetings will do more to promote these activities than will a large amount of correspondence and reading. An enthusiastic individual can by his presence and personal appeal make for his cause life-long workers of individuals who could only be mildly interested by written appeals.

A state's exhibit of its resources may induce a single individual to establish industries that will yield a return many times in excess of the cost of the exhibit. The same result may grow out of a manufacturer's exhibit, or from a new idea gained by a mechanic. Surely the influence of a comprehensive fine art exhibit upon all people, and especially upon the thousands who

have never seen real objects of art will alone justify large expenditure of time and money.

One of the most important results of the exposition as far as they relate to the material and æsthetic welfare of our nation as a whole is the advancement of the outdoor arts as represented by landscape design, architecture, sculpture, the closely allied industries of floriculture, horticulture etc., and the closer personal and professional relations that have grown out of the design and execution of the plans for these world's fairs.

Well organized, united action of this character began at the World's Columbian Exposition, at Chicago in 1893. We must not overlook, however, the Centennial at Philadelphia in 1876 and its very marked influence upon the outdoor arts. Here the design of buildings and grounds was governed very largely by the engineer. The architectural profession did not then have the influence which it has now and landscape design was represented by only a few able men whose public work had been confined almost wholly to public parks, the design of which had not at that time developed sufficiently in beauty for people to realize that the profession would eventually stand at the head of the arts of design.

The so-called Queen Anne style of architecture, the general use of hardy rhododendrons, and the introduction of bedding-out designs in tender plants were direct outgrowths of this exposition. The introduction of rhododendrons was of real permanent value. The use of bedding-out plants developed into a craze almost as bad as the tulip mania of the Dutch, and its more ardent devotees devised such astonishingly curious and ludicrous conceits that discredit was cast upon such a use of plants. This, coupled with the excessive cost and the comparatively short period of perfection, is resulting in the gradual abandonment of the bad as well as the good features of bedding-out. The less said about the Queen Anne house, the better; it was a bad case of architectural jim-jams from which the ready-made plan architects have not yet recovered. The good architect of today simply gasps and says nothing when this period is mentioned in his hearing.

The Chicago World's Fair grew out of a sympathetic, harmonious and united effort on the part of the ablest men of the outdoor art professions to secure perfectly proportioned groups of buildings with suitable landscape environment and perfection

in detail. No other exposition in this generation has come or will come as close to the highest ideal as this, because so many men of equal ability cannot be induced to give their time and best thoughts so unreservedly to such a problem again.

The influence of the Chicago Exposition upon the men engaged in the outdoor arts was positive and direct. That it was a profound inspiration to architects to do better work was made evident almost immediately in a better class of business, residential and public buildings. It gave as nothing else had done, to professional men and the people at large a clear conception of the profession of landscape architecture as a fine art, for it was generally known that the site was adopted on Mr. Fredk. Law Olmsted's advice, that he outlined the general plan in his report, and was one of the conferees that placed the first draft of the plan upon paper, and that all landscape work was under his direction. The sculptors and mural decorators also opened a broader field of usefulness by their work at Chicago. Since this fair the men and women of the allied fine art professions have been coming closer and closer together in their relations. They are seeking to coöprate with each other more frequently in public and private work. A natural outgrowth of this coöperation is the serious and practical consideration of comprehensive schemes for the promotion of civic beauty that will after a time make America the most beautiful country in the world.

Every important exposition that has followed the World's Fair copied the essential features of its plan. The California midwinter exposition immediately following was not an artistic success taken as a whole and it did serious injury to and left undesirable mementos in a beautiful park. The Omaha Exposition was an artistic success so far as buildings were concerned, but it followed the lines of the Chicago Fair too closely and suffered by comparison. The Atlanta and Nashville Expositions were lacking in the beauty and unity that gave the Chicago and Omaha Exhibitions distinction. Their average of excellence was high enough, however, to have an influence for good upon the whole South, as will be true undoubtedly of the Charleston Exposition. The work at Buffalo was taken up in the same spirit as it was at Chicago by a different group of men. No one can deny the brilliancy and beauty of many portions of the exposition. There

was not, however, that careful and successful adjustment of proportions that was the hall-mark of great minds acting harmoniously at Chicago. It was, to use a recent expression, designating the work of the architect, the "frozen music" of a remarkably successful vaudeville entertainment, not that of a grand opera. The color scheme, a most difficult problem, was well handled. So also was much of the planting in interior courts and about the bases of important buildings. The use of the upright forms of red cedar and poplar growing out of masses of shrubs at salient angles of buildings was especially appropriate. The use of vines in window and roof boxes also added much to the gaiety and grace of certain architectural features. Away from the buildings the spotty beds in lawns gave the grounds the appearance of having a bad attack of an unpopular malady that since the exposition has come to be wide-spread. The Pan-American Exposition was not alone in this respect. The general effect of the grounds about the buildings of nearly every exposition has been disfigured by beds of really fine material that did not come into harmonious relation with the buildings, or the plan of the grounds, but were mere spots set apart by themselves.

It is too early to determine the influence that the Pan-American Exposition will have upon the outdoor arts. Following the precedent established by the two other great expositions, we should expect an eruption of excessively ornamented and highly colored structures perhaps quite as bad in their way as the poor Queen Anne's nightmares, because few men can hope to design successfully such buildings as were represented at the Pan-American where the whole situation was controlled very largely by the only men who have been eminently successful along these lines. Probably the sober sense of American architects will discourage this movement, especially in the colder sections of the country where this style of architecture would be quite out of place.

A reference has already been made to the spotty planting of considerable sections of almost all World's Fairs' grounds. Primarily, it is due to a defect in the general plan of the expositions whereby no adequate provision was made for such outdoor exhibits. The out-of-the-way back corners of no use for other purposes were assigned to such exhibits. Usually the soil

and situation were bad, and this, coupled with the shortness of time available, made a successful exhibit of hardy plants an impossibility. Exhibitors could make this injustice so evident that exposition authorities were compelled to grant locations in the open spaces designed solely to give the buildings an harmonious setting. The only really successful exhibits possible were of particularly vigorous plants that would grow well or continue to look well the first year, such as Cannas and Rhododendrons.

Horticultural interests have never been adequately represented at any of our World's Fairs, and even if favorable conditions had been provided the time was too short to prepare and establish exhibits in a satisfactory manner.

The Massachusetts Horticultural Society is large enough, strong enough, and able enough to take a commanding position with reference to all matters that pertain to the interests it represents along the lines of outdoor art work. Now, societies like individuals have periods of repose and during these periods of repose they sometimes have pleasant dreams in which some little incident is so startling and shocking that they wake with a shudder and a scream and for a few hours are so unstrung that they will quarrel with their best friends; but a day's activity dispels all this and in another day the whole incident is forgotten. The Massachusetts Horticultural Society needs a day of activity; it needs to study the movements of the day, the influences growing out of such expositions as have been referred to, and the work of other societies having objects similar to its own — then to study its own work to see if it is gaining or losing power and influence. If it is losing, then the control of its wealth is likely to come into the hands of a few able, shrewd, selfish men who will establish a mutual admiration society with occasional banquets and just enough work to keep other members quiet. If it is gaining it will take up new and living issues that will interest every member and make active workers of a majority and benefit the public at large. It will bring its work before the members in fresh, timely publications issued at frequent intervals; it will encourage such new lines of work as have recently been laid down by the School Gardens and Children's Herbariums Committee; it will discourage the ancient and commonplace in its exhibits by actively encouraging new exhibits and new

exhibitors; it will encourage more original investigation and less exploitation of old things; it will reach out both hands in good fellowship to other local societies having closely allied objects in view, coöperate with and aid them in their work and at the same time add to the interest of its own exhibits as it has done through its connection with the Boston Mycological Club. It will not compete, even remotely, with the legitimate work of other societies, as it is doing in its exhibits of wild flowers, or duplicate work that comes directly within the field of, and is being done by, another society, as it is in its Forestry Committee.

It will continue to coöperate with other societies in the care, acquirement, and safe-guarding of public reservations, or in the preservation of notable landscape objects as it has with the Forestry Association in connection with the Greylock Reservation. It will continue to extend a welcoming hand to visiting national associations having allied interests as it has to the American Park and Outdoor Art Association.

In closing let me express an opinion that active aggressive work and cordial sympathetic coöperation with others will place the society on a still higher plane than it has been in the past, and bring correspondingly greater results; also that an aggressive and good-tempered discussion of all the problems coming before the society will do it good, and I hope most sincerely that what I have said may help to bring this about.

Discussion.

Benjamin P. Ware said that he should like to inquire whether the lecturer felt that the desire for World's Fairs was at an end, and asked if there were not other ways by which people could acquire love of beautiful homes and home surroundings than through the lessons taught by a great exposition.

Mr. Manning replied that though the public get great good from the expositions, such fairs have proved to be unsuccessful financially, and it is doubtful whether, after the St. Louis fair, any other great city can be induced to undertake another one. A horticultural Society like this could, as regards outdoor arts, exert much the same influence. We could have here an exhibit which would be national in character.

Michael Sullivan thought that at Chicago the horticultural

feature was the most prominent part of the exposition. He said that Boston had the foundation for one of the finest World's Fairs and suggested that a marine and inland exhibit might surpass all former fairs.

President Hadwen asked if the lecturer could give a few points on matters that are essential to the adornment of rural homes at a small expense.

Mr. Manning answered that one thing of importance was that the lawn space should be taken advantage of; that it should not be broken up by scattered shrubs but framed in rather by a wall of shrubbery. Floral displays should be in flower gardens into which one could step from the house, rather than numerous small beds. Masses of flowers, too, are more effective than dozens of different varieties in smaller quantities. The main object is to make an attractive scene in which no one feature is too conspicuous. The house itself should be connected with the surrounding grounds by planting around the foundations. Uninteresting features should be shut out by shrubbery. There should be a preservation of natural existing conditions, though these are sometimes looked upon by the owners as undesirable. Trees and shrubs already on the land may be better suited to the surroundings than anything else could be, and are often better left standing than removed. Irregularity of surface is often an element of beauty not found in smooth lawns. In planning home grounds one should be largely governed by existing conditions.

In making plans for the house the question of the view should be taken into account and the rooms most used should have the best outlook.

William C. Strong thought our Society had had as great an influence on the public tastes and opinions as a world's fair would give and emphasized especially the strong though quiet influence on the community, through so many years, of our Saturday exhibitions and of the work of the Committee on School Gardens and Children's Herbariums.

On motion of Edwin A. Hall a vote of thanks to the lecturer was unanimously passed.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 15, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE EVOLUTION OF VEGETABLE CULTURE DURING THE LAST FORTY YEARS.

By WARREN W. RAWSON, Arlington, Mass.

By evolution we mean progressive development, and I doubt if there be any other branch of business in which this progression is more pronounced than in the culture of the various vegetable crops which have been grown for market for the past forty years. This advancement has been made in many ways, namely, the introduction of new varieties, the improvement of old varieties, the greater intelligence in the use of fertilizers to enrich the soil and thus increase the production, the improvement of farm machinery and the methods of cultivation, and the introduction of glass houses for the forcing of crops during the winter months.

Forty years ago the cultivator of the soil had to depend largely on his own exertions and experiments to attain success, but how different today! Agricultural Colleges exist in every State, whose object is to instruct him in the culture of all crops; the amount of literature pertaining to agriculture has increased enormously; and active horticultural and agricultural societies have been formed in nearly every community for the exchange of ideas, thus enabling him to benefit from his neighbor's experience and vice versa. But with all these advantages of today there must be coupled, to ensure success, the same energy and application to work that then existed.

We have learned that it is possible to produce three crops where only one could be obtained heretofore. This has been brought about by more thorough cultivation and the application of such fertilizers as will bring the soil up to the required standard.

Great strides have been taken in agricultural chemistry during the last forty years. Now we can tell by analysis the exact

amount of the essential elements, namely, nitrogen, potash and phosphoric acid in the soil, and if one or two are deficient for the successful production of the crop they can be supplied. There are special fertilizers prepared composed of a greater or less proportion of the above named elements according as the various crops require, as lettuce fertilizers, cabbage fertilizers, etc.

Stable manure was the fertilizer used then and sold for four to five dollars a cord, but now it can be bought at the stables for one dollar a cord, the reduction in price being caused by the greater use of commercial fertilizers instead of the manure. However, many of the successful market gardeners of today stick to the old way, feeling that it is the surest and best, and use large quantities per acre, perhaps three times the amount used forty years ago. That does not imply that three times the crop is produced, for it is evident that more dressing would be required to produce a crop on old land that had been used for that length of time than it did then. Nevertheless, it is a fact that some of our best and quickest crops are produced on this same land that has been used year after year.

The improvement in machinery has been so great that one man and one horse can do the work that required many, forty years ago; thus the expense of production is greatly diminished.

The climate has so changed during the past four decades that crops which were very successful then out of doors are almost a failure now. Cucumbers and melons may be cited as examples. Then we had spring, summer, autumn and winter, but today the seasons are more or less mixed up and often in the summer season we have weather that will not permit the two crops mentioned to live out of doors and they are therefore grown under glass.

Glass had just begun to be used forty years ago and I remember one man who had five hundred sash and everybody thought it was an enormous amount, but today they are few who have as small a number. After the sash came the glass houses, and these have been enlarged and perfected to such an extent that today the growing of vegetables under glass has become a specialty and crops have attained a perfection unknown forty years ago. Acres are covered with these glass houses heated with steam or hot water and the cultivation of the same has developed into the most important part of market garden business.

Four crops can be produced in a year, three of lettuce and one of cucumbers. It would be difficult to estimated exactly the cost of production of each cucumber or of each head of lettuce in a house but we can safely say that it is at least one-half that of forty years ago. They do not sell for as much in the market as the supply is greater in proportion to the demand, but more can be sold at a moderate price and a fair profit obtained from the whole crop.

Much of the land cultivated forty years ago is too expensive today to grow crops on and the growers are moving away to a greater distance from market where land is cheaper and taxes less.

It is the same in the market garden business as in many others, in that goods are produced in greater quantity at a less cost of production and sold at a smaller percentage of profit than forty years ago. What some of the market gardeners of today spend for luxuries would have been considered a good profit then. The general mode of living has changed greatly. Now the market gardener has his pair and fine carriage while forty years ago he went to church with one of the farm horses. Now he has two or three weeks vacation in the summer; then he toiled the whole year round. His boys had to work when not at school and now they do as they please. In fact the market gardener of today is classed as an up-to-date business man. He works more with his head than with his hands. He plans the work for others, keeps informed every day of the condition of the market, as to its prices and the supply and demand, knows all about the new seeds and machinery introduced, and in every way endeavors to get the greatest amount possible out of his land.

One of the most vital phases of this evolution of market gardening is the improvement of old and introduction of new varieties of vegetable seeds. Forty years ago most of the market gardeners grew their own seeds or exchanged with their neighbors, that is, one man would grow one kind and exchange his surplus with one of his neighbors who had a surplus of some other variety. There were only two or three seed stores in Boston at that time but today there are three times as many and many of the market gardeners buy large amounts of seed of New York and Philadelphia houses.

The seed business of today is one of enormous detail and is

brought down to a system that was not dreamed of forty years ago. The seedsman knows what is the very best locality for every crop and sends his stock seed to a grower in that locality whom he knows makes a specialty of that particular variety. For instance, we get our peas and beans from different sections in Northern New York and Canada, our vine seeds from Michigan and several states in the West, our onion seed from California and Connecticut, and our radish and spinach from Germany, where we also get the greater proportion of our flower seeds. By this system better seeds are produced at less prices and the seller, knowing the origin of the stock, can tell what the crop ought to produce under ordinary conditions.

All fertilizers are now required by law to have a correct table of analysis on every package or bag, that is, the different percentages of each element that they contain, so that the buyer can tell just what he is buying. Only by practical experience can he tell what kind and how much of that kind his land needs for the very best results. Only he who has given it the closest study realizes how true it is that different crops require different treatment and different fertilizers for different tracts of land.

Then there are new insects coming up every few years and creating havoc among the market garden crops, and to learn how to successfully cope with these is another chance for study which was unknown forty years ago. If the market gardeners had known as much then about the numerous things I have mentioned as they do now, many of them would be millionaires.

Probably the most interesting phase of the evolution of market gardening during the last forty years is the study of the changes and improvements made in the different kinds and varieties of vegetables. I can remember many of them myself, but having access to some old Boston seed catalogues of that date, I am able to trace them more clearly. I will take them in alphabetical order and speak of some of the principal ones.

Asparagus.—This crop is much the same as it was then but cultivation has improved it very much. Probably Mr. John B. Moore of Concord did as much for the improvement of the asparagus as any grower and we are now growing and selling Moore's Cross Bred in preference to many other varieties. The town of Concord

is today the principal locality where this very fine vegetable is grown. It can be forced to some extent.

Beans.—More changes have taken place in the bean than in any other vegetable. This is especially true of the dwarf or bush variety. Forty years ago we did not know the wax variety which is the most popular type today. This was introduced about thirty years ago. The Golden Eye Wax is about sixteen years old and was brought out by one of our Boston seedsmen and sold to other seedsmen for stock at ten dollars per peck. Undoubtedly the most popular wax bean today is the Kidney Wax which is catalogued under various names. It is a very tender variety but quite difficult to grow on account of its tendency to spot or rust. This is especially true in a wet season when it is almost impossible to prevent the rust but in a dry season very little will appear.

The Mohawk, Six Weeks, Valentine, Red Cranberry and Dwarf Horticultural are about the same as forty years ago. There are today quite a number of varieties of the Horticultural which sell under various names, one of the most prominent being the Goddard or Boston Favorite. Next to the Kidney Wax the Horticultural Wax and Valentine Wax are the most popular of the wax varieties. The Brockton Pole, introduced in 1884, as well as the Worcester Pole, of more recent introduction, are great favorites as pole varieties. There are a number of varieties of Lima Beans both pole and bush, the old Sieva Lima being the forerunner of this type.

Beets.—I can well remember the introduction of the Dewing's Beet by its originator, Mr. Dewing. The seed was in great demand at that time, which was about thirty years ago. We have had many improvements since then, the most popular ones being the Favorite, Edmands, Detroit Dark Red and the Crosby Egyptian. The last mentioned is the best early and forcing variety and was introduced by Mr. Josiah Crosby about twenty years ago and has held the reputation of being the best early beet ever since. The seed used to sell for two dollars and a half per pound but today the genuine article costs one dollar per pound.

For second early varieties the Favorite and Edmands are selected and the same for late. They are both distinctly blood beets of good shape and not very large. The long beets that we used to see in the markets are seldom seen now. The seed is sown how-

ever for beet greens as it produces a dark red leaf and is very prolific.

Cabbage.—As to the cabbage there are quite a number of the varieties which were popular forty years ago that are still in demand today, such as Early York, Wakefield, Winnigstadt, Drumhead, Flat Dutch and Savoy. These of course have been greatly improved by culture but they still posses the same characteristics they had then. The most prominent of the newer varieties are the Early Spring, Early Summer, Stone Mason, Drumhead Savoy, All Seasons and Danish Ball Head.

Only the green worm and maggot affect the cabbage but when grown in large quantities the worm does not bother the crop much, and if grown on new land the maggot can be avoided.

I think there is no crop that I have mentioned or shall mention where there has been a greater change in market price than in the cabbage. We used to get ten to fifteen dollars per hundred while today five to six dollars is the top price. There is some profit in them at this price for we grow many more of them and can grow them cheaper but not for one half what we did forty years ago.

Celery.—This crop has grown as much in popularity as any on the list. The varieties have changed greatly, in fact not one of the varieties that were popular then are in use today. There is also a vast difference in the cultivation. We used to grow a branching celery but now the market demands a solid heart. Then the rows were six feet apart and one foot apart in the row, but now three feet apart and six inches in the row are the proper distances. So that now we have to use four times as many roots as formerly but we do not get as much return for every acre of land.

The introduction of the Paris Golden variety made a great revolution in the celery market but not for the benefit of the producer. This is a self blanching variety, grows very readily on new land and is popular for the early market. But when the Giant Pascal and Boston Market varieties appear on the market the Paris Golden sells at a discount. I sincerely believe that if we had never seen the Paris Golden celery we would be better off, for the other would bring enough more to make up the difference.

The celery crop is one that requires a large amount of labor and is not in many cases a very profitable crop but it serves the purpose of keeping the men at work during the fall and winter and to

occupy the land as a second or third crop and thus help to make business if not profit.

There is not much difference in the cultivation of the late varieties. They are bleached by banking the earth up around the plants. The first banking is accomplished by the help of the celery plow, but the second banking has to be put up with shovels. A greater part of this late celery is put into pits and kept for winter use. When kept till spring it will bring a high price, but as it takes a greater number to make a dozen in late winter or spring there is more profit in selling it in the fall at one dollar per dozen than in spring at two dollars.

Corn.—Great improvements have been made in the varieties of sweet or sugar corn and much larger quantities are raised as compared with the early sixties. Adams' Early and Evergreen were the two principal varieties then. Now we have Early Crosby, Early Cory, Marblehead, Moore's Concord, Potter's Excelsior, Black Mexican, Mammoth Sugar and Stowell's Evergreen. All of these are fine in quality and are grown in different sections in different seasons and are in the market from July 1st till frost comes. As to the cultivation of the sweet corn we employ practically the same methods as were in vogue forty years ago.

Cucumber.—This is one of the best known vine crops and was grown almost wholly out of doors forty years ago and very little under glass while now it is just the opposite. This has been brought about by the change in the climate which renders the outdoor crop very unprofitable as a rule. The cucumber is now grown all the year round in houses made for the purpose and it is generally considered to be one of the most valuable crops for the market gardener.

We have many of the same varieties now that were known then but they have all been greatly improved. The Improved White Spine is the most generally grown and is the best variety for market. The cucumbers are started in a house after a crop of lettuce has been taken out. The vines are trained upon trellises made of slats and wire so that the fruit will hang down and thus be very easily picked. The bees are put into the house when the blossoms appear and in two weeks from that time the first fruit will be picked, that is, in the spring or summer months when the

temperature will run as high as 100° in the day time and 70° at night.

Forty years ago we used to get as high as fifty cents apiece for cucumbers but not a very large quantity could be sold. Today large amounts are sold for ten to twenty cents each, but the time when they pay the best and when we get the most out of the crop is when they bring from five to fifteen cents. Then we can sell them by the thousand. Many of them are shipped to New York and other large markets and this makes the demand very great. I have known of one market gardener who picked fifty thousand in one day and sold them in our market at four to five cents each. This was in the month of June, 1895. The cucumber crop is a very expensive one to grow as it requires so much care and heat. The coal pen grows lower very fast in cucumber time.

Lettuce.—This crop has been improved and the sale increased as much as any I can name. It is not only grown in the field but also under glass and may well be termed a continuous crop. The headed varieties are called Boston Lettuce all over the country, for the market gardeners of Boston and vicinity have done more than any others to bring these varieties up to their present highly developed type. Many times the quantity is produced today than was grown forty years ago. The varieties are much larger in size: five to six dozen filling a barrel now whereas it would have taken twice as many then.

The plain Hothouse and Crumpled Leaf varieties are grown under glass, and the Black Seed Tennisball, Big Boston, and Salamander out of doors. Lettuce is grown by the acre both in the field and under glass. In the house it will grow best in a cool temperature and a slight frost may not injure it.

Like many others the price of this crop has been greatly reduced and sells for about one half what it did forty years ago, but it is produced at a much less expense and sold in much larger quantities.

Onion.—This is one of the standard or moneyed crops of the market gardener. Years ago the seed only was sown but today those who wish to have another crop on the same land come off earlier, set out a small onion, which was raised the season before and kept through the winter, and thus they can produce a crop about a month earlier than from the seed. In this way a better

crop of celery for a second crop can be produced. The maggot has troubled the seed crop so much of late years that it is safer to put out the sets. There has been very little change in varieties the past forty years and the Yellow Danvers is still the leading variety as it was then.

Peas.—The varieties grown forty years ago were few compared to the great number now in use. All we have left of that time are the Daniel O'Rourke and Champion of England. Neither of these is very popular now.

I will not go into detail as regards the introduction of our leading varieties of today but will mention only some of the best for the market and for the home garden. The earliest pea is the Clipper, next the Nott's Excelsior, then comes Gradus, the newest or all. This is a fine market variety but does not yield as well as some of the others. McLean's Advancer for eating is the best of them all and is also a very good cropper. American Wonder is a very dwarf variety and for the home garden is one of the best. In quality it is the same as the Nott's Excelsior. The Stratagem is one of the best late varieties.

Of late years peas have not been grown extensively by the market gardeners about Boston as the destructiveness of the pea louse and the cost of picking have rendered them an unprofitable crop.

Radish.—For many years the long scarlet radish was the most popular but of late years the globe shaped variety is in greater demand. They are grown very easily and large quantities can be produced from a small tract of land. Very few of the long radishes are seen in the Boston markets now.

Rhubarb.—This is both an outdoor and a forcing crop. When forced and put into the market in winter and early spring it brings a very good price. When grown under glass it is quite productive. Very little, if any, was forced forty years ago but quite a lot was grown out of doors as we grow it today.

Squash.—The oldest of the present varieties are the Marrow, Hubbard, Crookneck and Scallop. These were all popular forty years ago and are still grown quite extensively today. Many new varieties have been introduced, two of the most prominent being the Essex Hybrid and Bay State, introduced in 1879 and 1886 respectively. They are the same in quality, are large producers and can be used for fall or early winter. The Hubbard for a late

keeper has held its own though it is not so prolific as some of the other varieties. The old Canada Crookneck is seldom seen in our markets today nor is the old time pumpkin, but there is a small sugar pumpkin, that is grown to some extent.

The method of culture is similar to that of forty years ago but today we have more insects to contend with. The change of climate also makes it difficult to grow squashes today. The past few years they have paid very poorly. When we get a good crop, they bring nothing; when we get a poor crop the price goes up, but it makes no difference what the price is if we have none to sell.

Tomato.—The past forty years have witnessed a great many changes in this crop not only in varieties but in many other respects. The Boston Market was very popular a number of years ago but very few are grown today as there are many earlier and better varieties. The Essex was an old variety and was introduced in 1860, the Essex Hybrid in 1873 and the Early Comrade in 1892. All of these were smooth, round and of a light pink color. The Acme, Paragon, Emery and General Grant are all smooth and of a bright red, as also are the Puritan, Stone, Belmont and Livingstone varieties of a more recent date. The Dwarf Champion is a popular variety on account of its bushy growth, thus enabling close planting for garden purposes.

Many years ago there were quite a number of canning factories located in the vicinity of Boston that put up tomatoes and bought their stock from the growers in this vicinity, but today there are very few of these factories here. They have moved further out and put up their stock near where it is grown for them by the farmers who sell their whole crop by contract. This is an improvement in one way as they get their tomatoes fresher and put them up in their proper season.

There is probably no vegetable grown that has increased as much in consumption as the tomato. It is on the table all the year round and no dinner seems complete without it. Tomatoes grown under glass are selling today for fifty to seventy-five cents per pound. Some are better for this purpose than others. The Lorillard is the best of these. The plants are started in the summer and come into bearing in the fall after the outdoor crop is done and continue to bear throughout the winter.

I have noted many changes in climate, crops and methods of cultivation but there is one thing in which there has been no change during the last forty years, except that resulting from higher cultivation, and that is the land itself.

There are today acres and acres of uncultivated land at a reasonable distance from market that will produce good crops, perhaps not as quickly as on our higher cultivated lands, but of a higher standard and better keeping qualities.

To these uncultivated lands I advise the young men to go, and, it they have a liking for and a knowledge of the business, they are sure of success. I am speaking from my own personal knowledge of men who have gone into the cultivation of vegetables during the past ten years. Nearly all are making a success of it and they constitute the best class of business men to deal with as you are practically sure of your pay.

They have to employ more capital than forty years ago but as that same capital can now be hired at a much cheaper rate of interest they ought to do as well, if not better, providing they attend to their business and work intelligently. By this I mean that they must learn what crops are best adapted to their land, also the demands of the nearest market, and then devote their whole time to these few crops and grow them in quantity. A market gardener will do better if he be located near a large city at a distance from Boston or New York than if he caters to these two cities alone, for the reason that so much southern truck is now sent to Boston and New York that these markets are often demoralized, whereas as outside market will afford a good trade and a steady price. Thus the market gardener is sure of his market but in order to be successful in the true sense of the word he must have a constant supply on hand and ready to market all the time so as to be able to take advantage of the market when it is at its best.

We are living today in an age of improvement and the vegetable business can well claim a prominent place amongst those industries in which the improvement has been the most marked. I have shown where many changes have taken place in all departments of vegetable culture. New ideas have been introduced whereby the cost of production has been reduced, while the production itself has been increased. The climate has changed thus rendering some crops unprofitable. Labor has been cheapened by

the introduction of machinery. The introduction of glass has made what may be termed a continuous season. Electric lights are now used to force a crop and are a success. Sterilization of the soil is practiced with a view to destroy all vermin, weeds and everything that is injurious to the crop, and is a great benefit, for now we can grow such crops as lettuce and cucumbers without the fear of their being destroyed by the fungi which heretofore had caused so much damage.

When we consider how great has been this progressive development it is no wonder that we would rather have 1902 with all its blessings and luxuries than 1862 with its hard work and old-fashioned methods. None of our profession have became millionaires but nearly all are well to do. They are very independent, live as well and as long as any other class of business men, and are the leading men in their respective townships. They have more time to themselves and get more good out of life and in all respects are much better off than the market gardeners of forty years ago. I do not know of a single thing that is not an improvement over the old times. Many of us love to look back and think of those old days but none of us would wish them back again. With the opportunities of the present day, I know of no other business whereby one can get greater pleasure than in market gardening providing he takes a sincere interest in it. I do not believe in a man engaging in a business to which he cannot devote his whole heart and soul and to which he is not adapted, but for a man who takes a liking to it, there is no business in the world so fascinating as the cultivation of vegetables for the market.

Discussion.

William C. Strong referred to the lecturer having said that electricity was now successfully employed, and asked him if he would state to what degree it was successful.

The lecturer said that he used the arc light and always had found it beneficial, crops being more luxuriant and maturing more quickly where it was used. He said that he used it up to one o'clock, A. M., the time when the current was turned off. He did not think it would injure the crops to use electric light even longer than that.

Varnum Frost disagreed with the speaker as to the use of electric light and thought the plants needed some rest. He thought many farmers who did not use electricity had quite as good results as those who did. He said that electricity gave light but not warmth, and that it was high temperature which made plants grow. He suggested that, if electric light *is* so beneficial, there should be remarkably luxuriant grass, shrubs, etc., around our street lights which burn all night. Mr. Frost said that the lecturer had spoken of certain crops which failed. He thought many could remember the time when these crops, fruit especially, did not fail. Forty or fifty years ago pests and blights which trouble us now so much did not exist. He thought, judging from the success farmers formerly had with their crops, that they knew *something* then, and he said that he considered farmers of today less prosperous than those of forty years ago.

Michael Sullivan thought that comparing the farming of forty years ago and that of the present time was like comparing the modes of transportation then and now. He said that if the farmer of forty years ago, with his knowledge, could have had the market we now have, he would have become independent in five years. We have everything to contend with now. A box of strawberries, for instance, can now be had for twenty-five cents at a season when, formerly, we could get twenty-five cents a berry. Cheaper transportation brings all kinds of produce to us continually, making competition much closer. However, there is still a good living to be had from farming, in New England, and young men would do well to take some of the lands now standing idle, put in fertilizers and prepare the land for the crop to be grown; then, if there were good roads, making it easy to get to market, they would succeed.

New England is neglecting the production of apple and pear trees. The injurious insects, etc., which have been spoken of, should not be so great a bugbear. It is quite a simple matter to spray with Bordeaux mixture, which is a remedy for many evils of this sort. One must, of course know when and how to apply the mixture.

The great trouble with market gardening seems to be the market. It is very hard to foresee just what crops to raise. Most farmers overdo some crop. They are very apt to raise some par-

ticular thing simply because other farmers do and then the market becomes overstocked. They must learn to study conditions and demands.

At the close, it was voted, on the motion of George D. Moore, that the thanks of the Society be presented to the lecturer for his very interesting paper.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 22, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered under the auspices of the Massachusetts State Board of Agriculture:

BIRDS AND INSECTS IN THEIR RELATION TO AGRICULTURE.

By E. H. FORBUSH, Ornithologist to the Massachusetts State Board of Agriculture.

The number of species of insects on the globe is vast and that of the individuals is beyond comprehension. It is greater by far than that of all other living creatures combined. More than three hundred thousand species have already been described and there are many thousands of undescribed species in museums. Dr. Lintner, the late distinguished entomologist of the Empire State, considered it not improbable that the number of species would reach one million. Each of these species is enormously productive and it is undoubtedly true that were the progeny of one pair of insects allowed to reproduce without check, it would soon cover the entire habitable earth.

The Rocky mountain locust in its flights filled the air and hid the sun. From the high peaks of the Sierra Nevada it has been seen filling the valleys below and the air above as far as a powerful field glass could bring the insects within focus. The chinch bug covers the corn and grain fields in countless millions over towns, counties and states. The army worm moves at times in solid masses destroying the crops in its path.

The voracity of insects is almost beyond belief. Dr. Lintner says, "A certain flesh feeding larva will consume in twenty-four

hours two hundred times its original weight." There are vegetable feeders, caterpillars, which during their progress to maturity within thirty days, increase in a size ten thousand times. To reach this remarkable growth a man at his maturity would have to weigh forty tons.

In view of such facts, it will be seen that insects, by reason of their enormous multiplication and great voracity, may become far more dangerous to crops if unchecked than larger and more powerful animals.

It may be truthfully said that this country suffers far more from the depredations of insects than any other. And this is to be expected, in view of the methods employed in agriculture in this country, and the conditions under which it is here conducted.

A considerable proportion of the fertile land in America is still uncultivated and there are vast tracts in which insects can breed unmolested until they exhaust their feeding grounds and overwhelm the surrounding country, as in the case of the migratory locusts. In the settlement and development of a new country man at once begins to disturb the long established relations between living organisms. In a forest country the woods are cut off, the larger birds and mammals are exterminated or driven away, and great disturbances occur in the economy of nature as a consequence of these changes; new plants are introduced and with them new insect pests are brought in from other regions or from foreign countries. As civilization advances large areas like the great grain farms of the northwest, the orange groves and vineyards of California and the great orchards and potato fields of other states are devoted to special crops. These tracts offer great quantities of desirable food and thus stimulate the reproduction of insects to a remarkable degree. The spread of imported species to the very confines of civilization is accelerated by an ever increasing traffic on newly constructed highways and railways, and, as these imported insects escape most of their natural enemies by being brought to this country and find more favorable conditions awaiting them here, their fecundity and destructiveness are increased in undue proportion even to their increased food supply. Such are the cabbage butterfly, the wheat midge, the Hessian fly, the gypsy moth and others. Native species which were harmless to agriculture under natural conditions in the wilderness sometimes

take advantage of the introduction of a new and succulent food plant and follow it back from the frontier into the agricultural regions, spreading over the whole country and causing widespread injury to a staple crop, as did the Colorado potato beetle. As the country becomes settled and the ravages of insects increase, the settlers, instead of endeavoring to protect and foster the useful birds that were designed by the Almighty to dispose of the surplus insect production, pursue them with the gun and poison until the large useful species are nearly if not quite extinct. The wild turkey, grouse, prairie chickens, wild pigeons, ducks and geese, plovers, wood-peckers, blackbirds, larks, robins, and all birds which are "good for food" are slaughtered relentlessly and without quarter even at the season when the callow young must perish from starvation. The grasshopper-eating buzzards and all hawks and owls are shot at sight, anywhere and everywhere, by all classes of people. Many States offer bounties on the heads of supposed noxious birds, without being aware that such a policy is undermining the agricultural interests. Small birds are hunted for their feathers; bird egging boys increase apace; a million cats forage the fields and woods; fashion calls for millions of birds to deck the ladies' headgear. In the meantime insects increase and run riot. The locust, the chinch bug, the army worm, the codling moth, the plum curculio, the cabbage butterfly, the boll worm, the asparagus beetle, the canker worm, bugs, beetles, aphides, borers, grasshoppers and other insects destroy the ripening grain, sap the lusty fruit tree, devour its leaves, despoil the garden, field and forest and render the life of the successful farmer one continual battle with his insect foes. During the locust invasions in the west hundreds of small farmers lost their all and becoming destitute were forced to leave all they possessed and remove to more favored lands.

In 1854 the loss occasioned in New York State by the wheat midge (*Diplosis tritici*, Kirby) was in excess of fifteen million dollars.[1] The value of wheat and corn destroyed in Illinois in 1864 by the chinch bug (*Blissus leucopterus*, Say) is estimated at seventy-three million dollars.[2] The loss in the four States of

[1] Estimate given by Dr. Fitch, State Entomologist.

[2] 1st Annual Report of Injurious and Other Insects of New York State, By Dr. J. A. Lintner, Albany, 1882, p. 71.

Kansas, Nebraska, Iowa and Missouri during 1874 from the ravages of the Rocky Mountain locust is estimated at one hundred million dollars;[3] while the annual loss caused by insects in this country is said to be from three to four millions.[4] What wonder then that the farmer is taking desperate means to protect his crops! What wonder that deadly poisons disguised as insecticides are scattered by the ton over the foliage of many of our most important food crops, and that the experiment stations are continually searching for means to quell the annual or periodical raids of insect pests. And yet, strange as it may seem, the most distinctly visible and noticeable of all the influences provided by nature to prevent or control this insect surplus is almost wholly ignored, or worse, neutralized, by the people whom it seems especially designed to benefit. The land birds, that are by their structure, by their habits and preferences especially adapted and designed to consume great quantities of insects are not encouraged, fostered, or protected, but are pursued and slaughtered without mercy. Many of them are regarded as nuisances and pests and their services to agriculture are either entirely ignored or strenuously denied. Now let us look at this question of the utility of insect-feeding birds in the light of reason. There are absolutely no other creatures upon this earth that are so well fitted for searching out and destroying most kinds of insects in all places and at all seasons, over wide area as are the land birds and especially the smaller species. Wherever they are sufficiently numerous they will exert a strong influence for the suppression of any undue multiplication of insects. The very minute insects are all that are likely to escape.

A few of the reasons why birds are useful in checking insect invasions are obvious.

1. Birds by their powers of flight and telescopic visions are admirably adapted to search for and to find food over large areas, as well as for a sudden and swift pursuit of it and an unerring descent upon it when found.

2. The young of most land birds require a great quantity of insect food for their perfect development and, therefore, are raised at a season when their insect food is most abundant.

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[3] 1st report U. S. Entomological Commission, 1877, p. 121.

[4] Report U. S. Dept. of Agr. 1884, p. 324.

3. During this season the parent birds go to those points where insects are numerous that they may easily secure a sufficient supply for their young.

Hence birds gather in numbers wherever great insect outbreaks occur and not only destroy many insects themselves but feed still more to their young. This gathering continues from season to season until the noxious insect is so reduced in numbers that it is lost to common observation.

The full fledged birds are to a certain extent omnivorous and are thus able to subsist when insect food is difficult to obtain. In winter certain birds are quick to find those localities where the eggs of insects are plentiful.

It is at once seen how well certain families of birds are fitted for the pursuit and capture of certain families of insects. The thrushes dragging unwilling cut worms and grubs from the ground; the ground sparrows gleaning among the leaves and undergrowth for ground beetles; the woodpeckers drilling into the trees for borers; the creepers, nut hatches and titmice searching every crevice and cranny in the bark of the trees, extracting the hidden grubs, eggs and caterpillars; the warblers, vireos and wrens searching the twigs and foliage of plants and trees for the wary insects hidden there; flycatchers, bluebirds, swallows, warblers and swifts, cleaving the air in all directions and snapping up their flying or perching prey; the hawks and bitterns destroying grasshoppers; the owls, night hawks and whippoorwills noiselessly flitting about, pursuing the large night-flying moths, beetles and mosquitoes; all give evidence of perfect adaptation to the pursuit and capture of the insects on which they feed.

Birds of many species follow locust invasions and gorge themselves to repletion. It is a well known fact that birds assemble wherever the larvæ of moths, appearing in great numbers, strip the foliage from the trees. Birds quickly discover such localities and at once resort to them, seeking them as magazines of food supply for their young. I have observed blackbirds flying half a mile over the meadows to a spot where larvæ were plentiful, returning after each visit with caterpillars in their beaks, to feed their young. They seemed to prefer to travel this distance to a point where food was plenty and easily obtained rather than to search for it in the immediate vicinity of their nests. An orchard infested by canker

worms is visited by birds from far and near and the outbreak is generally checked in one or two seasons, if birds are sufficiently plentiful in the neighborhood. The amount of insect food which young birds will consume is not generally understood. Mr. E. W. Wood of Newton, a well known member of the State Board of Agriculture, informs me that during one season when the spring canker worms (*Anisopteryx vernata*) became quite numerous in his orchard, a pair of Baltimore orioles appeared and built a nest near by. In the meantime they fed daily upon the canker worms. This they continued to do so assiduously that by the time the young were hatched the numbers of the worms were considerably reduced. The birds then redoubled their diligence, carrying ten or more worms to their nest at once. Soon the canker worms in that orchard were a thing of the past. The foliage and fruitage were saved for that and succeeding years. Audubon says a woodcock will eat its own weight of insects in a single night. Samuels quoting from the experiments of Professor Treadwell shows that it was found necessary to feed a young robin forty-one per cent more than its own weight of worms in twelve hours to assure its healthy growth and development. It was found that the bird would consume nearly half its own weight of beef in a day. A man at this rate would eat about seventy pounds of flesh daily. Should a pair of robins have four half-fledged young to provide for, each parent would be obliged to secure a worm or its equivalent every five minutes, for at least ten hours each day, to supply the young with needful food. Wilson Flagg found by experiment that young robins required only insect food and remained healthy and vigorous on that alone. What is true of the young of a robin is undoubtedly true of the young of many other birds. Dr. Brewer says that a pair of jays feed their young five hundred thousand caterpillars in a season. Anyone who will watch robins, wrens, cuckoos, jays, woodpeckers and other birds, while they are feeding their young, will become convinced that the number of insects destroyed by birds is beyond calculation. Many birds eat the eggs of insects, and Dr. Brewer says a pair of jays will destroy a million eggs every winter.

The lecturer next took up the different families of birds in detail, illustrating his remarks by lantern slides of many of the more common and useful birds. This part of the lecture being

interspersed with references to the illustrations cannot be properly reproduced without them. Among the birds mentioned as particularly useful to agriculture were the vireos, sparrows (excepting the English sparrow), the swallows, tanagers, woodpeckers, chickadees and nuthatches. The crow and the robin were regarded as useful or injurious according to circumstances. The lecturer closed with some remarks on the usefulness of the migratory birds, with illustrations of their haunts both north and south, in cultivated lands and in the wilderness.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 29, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered under the auspices of the Massachusetts State Board of Agriculture:

SOME FAMOUS GARDENS OF THE WORLD.

By MISS HELENA T. GOESSMANN, Amherst.

Abraham Cowley, an old English writer of the seventeenth century, in writing of Agriculture and kindred subjects, says "God the first garden made, and the first city, Cain." A little later, in one of his books or essays entitled "Agriculture", he says, "The three first men in the world were a gardener, a ploughman and a grazier; and if any man object that the second of these was a murtherer, I desire that he would consider that after he was so, he quitted our profession and turned builder." So one sees, even in these whimsical, witty, humorous impersonations of Cowley, the tribute to the occupation of the gardener, the tiller of the soil, the planter of flowers.

The two greatest events of Christian history are associated in our minds with garden lore and garden life; the beginning of man's history in the Garden of Eden, and the beginning of the tragedy of the New Testament in the Garden of Gethsemane. Solomon in his song says, "A garden enclosed is my sister, my spouse," and Homer in the Odyssey eulogizes the beauty of

his garden where the ripe grapes hang down and the scent of the flowers makes the day joyful; where the work of man and the work of the Creator are one. Plato, you know, thought out his philosophy in a garden embowered in thyme and surrounded by fountains and walks, and when the people of his native city objected that the location he had chosen was unhealthy and wished him to live nearer the *Kathemnia*, he said, "I have my garden and in my garden I can think."

Xenophon tells us that when the Greeks sent an ambassador to Cyrus with gifts, he found him in his garden, and not only was Cyrus delighted with his garden, but he took great pride in showing the ambassador about and pointing out trees and plants which he had placed in the earth with his own hands. Aristophanes received inspiration from his garden, and here were probably suggested to him some of the pictures he gives us concerning the political personages of his time. Pliny the Elder eulogizes garden life; Pliny the Younger describes his own garden, where the water flowed down in cascade form, and marble images presided over a circular basin always full but never overflowing. Here he tells us that he ate his midday meal and the dishes of food floated in china fruits and flowers formed upon the water's surface which served as a table.

Saint Jerome wrote, thought, prayed and dogmatized in his garden, and a Chinese writer of the eleventh century speaks particularly of three flowers peculiar to his country,—the chrysanthemum, the pæony and the lily. He says, "In my opinion the chrysanthemum is the flower of retirement and culture; the pæony, the flower of rank and wealth; and the water-lily, the Lady Virtue *sans pareille*."

Petrarch speaks of his Garden of Apollo, all light and brilliant with flowers and fountains. Here he spent the merry hours, the hours of social exchange of the day; but to his Garden of Bacchus, almost strictly classic and secluded, he retired for his hours of composition and study.

Boccaccio, in the fourteenth century, praises the garden, and Erasmus, in the fifteenth century, suggests a scheme of color, simply anticipating in a way, Alfred Austin, who says that "exclusiveness in a garden like exclusiveness in society is a great mistake."

Sir Thomas More in his writings, and Montaigne in his essays advance the same views, and Sir Francis Bacon suggests that every gardener should have his garden arranged in a succession of blooms so that each month of the year should have its wealth of blooming flowers peculiar to the season, and thus never present an appearance of desertion.

Milton, in the seventeenth century, who learned so thoroughly the truth of his own philosophy, "They also serve who only stand and wait," speaks of this same lack of system in the gardens of his country. Alexander Pope in his letters similarly arraigns the English garden makers for the lack of harmonic simplicity. Yet not so many years later Byron blames Milton and Pope for the confusion of the average English garden. He claims that the English have destroyed their forests, have gone away from the beauty of nature and have made fashionable a stereotyped form of garden for the public, and he thus blames these two men who were all their lives discussing this lack of system. Pope had as a gardener John Serle, who passes into fame through the history of the garden at Twickenham; the garden which was a wonderful study, yet it seems rather an amusing thing to think that Pope should ask for classic simplicity, when from five acres he evolved such a garden that people thought him the owner of twenty-five. It was a series of labyrinths and fountains, and at the close led up to the loved tomb of his mother.

One always thinks of and sees England as a country of gardens. The quaint Hampton Court Gardens, surrounding the palace itself, a creation of the time of Henry VIII, with its thousand apartments, present an interesting study to the student of architecture; neither palace nor the gardens are materially changed since Henry's time. The latter gives one the idea of the tree arrangement and the box hedges, the combination of the French, the Dutch and the English. One Queen, (I think the wife of George II,) disliked very much the presence of the box hedges and caused all of them to be torn up, rather destroying the Dutch effect; but after her death they were all replanted, and are flourishing today. Then, too, at Hampton Court, in the Maze and in the Orangery, while tracing the work of Kent and the influences of André Le Nôtre, the great French gardener, one gets a liberal study in landscape gardening. However, it is not to the French that the English owe the develop-

ment of their garden system. You have all heard of that good man called "Capability" Brown, who did so much for the English parks. He was always discussing the capability of the earth and the capability of the country, and though his work was filled with mannerisms, he first developed the idea that the woods should be preserved. He had many friends as well as enemies among those interested in the so-called development of the landscape. He was heard to mutter many times before his death, "Oh, Thames, Thames, will you ever forgive me?" simply because he had caused the water of this river to be turned and utilized through the grounds of Blenheim. This was considered by the English of that day almost a desecration of this time honored stream.

However, if one wants to see English gardens in the completest sense, the Isle of Wight is the place to study them. There the traveler finds the richness of the flowers, the general cultivation, the intensifying, as it were, of nature's charms, without the destruction of them. There is one place in New England that gives you a fair idea of the Isle of Wight as one might gaze upon it from Carisbrooke Castle, and that is the view looking northwest from Mount Tom, with the patches of cultivation, the river, the roads and the farm homes. I never see that view in high summer without wanting to close my eyes and transport myself back to some pleasant weeks spent in the Isle of Wight. The poppy which with us is a cultivated flower, grows wild on the Channel Isle and the vast fields of yellow wild mustard in combination with the former make a wonderful picture. Here are hedges of thorn and box everywhere and even the simplest little cabins are covered with rich and luxuriant growths of roses many of them being so large and beautiful that you are surprised when they are offered for sale at the door of your coach for a few pennies, the same blossoms you would pay dollars for in our greenhouses. Everybody appears laden with roses. There is not yet, even in its larger towns, a savor of London about it and the preferences of the late Queen for its home life have kept much of the country simplicity there. The court life at Osborne House is like country life. The only mausoleum in the church there (Wappinham Church) is the marble tomb of the Prince of Battenburg, across the top of which lies a long rusty sword. On the hilt was bound a wreath of French forget-me-nots. I asked the care-taker who placed them there

and he said that every day when Princess Beatrice was at Osborne House she and her little family came over two miles and brought a wreath of French forget-me-nots to lay on the tomb of the father and husband, and when she was absent the gardener was instructed to do the same tender office in her name.

There has been no biography, perhaps, better deserved, in the history of the French landscape, than that of André Le Nôtre. He was the man who developed Fontainebleau and Versailles and gave the first impulse which preserved to the country the Bois de Boulogne. He was loved of kings and sovereigns, and his epitaph written by Saint Simon claims that one thing can be written of him; he was never an artist with a price; whenever there was a bit of nature to be developed he would put the same thought into his work whatever the compensation might be. He loved nature and worked for it. You realize the presence of such influence when you spend a few hours in the Bois de Boulogne, you see how from a country untilled and land poorly drained it has been developed into, perhaps, one of the most beautiful and attractive parks in the world. The French garden has never influenced the English garden as the English has the French. The country of France abounds in old fashioned flowers, but the French garden is a garden of continuous artificial effects. You can enter an English garden of a large domain and you are positive of what you will find there; you will find the arbors and the walks and the fountains. When you come to the French garden you turn a little group of trees or shrubbery, and where you expect to find a seat you find a nymph, or where you expect to find a fountain you find flowers, yet when you are tired or weary, there is always a comfortable seat. It is filled with surprises like the country itself.

To get, however, near the land that has made the garden a part of the home, one must go to Germany through Holland. You must come in touch with the Delft and the Old Haarlem spirit; see the fields of hyacinths, crocuses and tulips, and scent their odor in the air. In all the shops these blooming flowers are for sale, and tempt to extravagance the lover of flowers. There was a time in the eighteenth century, when bulb growing was the principal occupation of the Dutch people; when they gave up their speculations of every other kind, and their commercial interests for this. Then people made princely fortunes in the sale of these bulbs. There

is a story told of the almost miraculous escape from extermination of that famous bulb, the *Semper Augustus*. I cannot vouch for the story, but this is it. A merchant owned the last two bulbs of this variety of tulip. He intended to plant them eventually but he wanted all his friends first to realize his unique position, and placed them in a conspicuous place on his desk. He hired a man at one of the wharves to carry a parcel to his office, and the good fellow, not being paid for his services according to his own ideas, when the master's back was turned, put the two bulbs in his pocket thinking they were something good to eat, and then betook himself back to the wharf. He had just eaten one of the bulbs when he was interrupted in his feast by the arrival of his employer, who arrested him, accepting no explanation, and had him immediately put in jail. He had a very difficult task in clearing himself, and when he got finally off all he could say was, "It was a pretty poor onion at that!" They tell you that story often in old Haarlem and claim that from the rescued bulb came all the others of that name now growing in gardens.

When you leave Holland and pass out of the country of dykes, windmills, quaintness and solidity of charm, you come into Germany, and there you find the garden and the home are closely connected. No matter how small and unpretentious the house, there is always a garden, a little trellised arbor and rustic table and chairs at the rear of the house. There the family take their afternoon coffee, the hausfrau sits and knits, the neighbors come in for exchange of gossip and the men rest, smoke, and have their beer while discussing the doings of the day. There is much encouragement for true gardening in Germany. It is one of the most cultivated of lands. Going west, east, north and south it presents a perfect patchwork of gardens. The farmers do not live on their farms; they live in towns or dorfs, and you will find the homes of the people grouped about the church and the casino, while the adjoining country is marked off for farms. There they go during the day to work and return at night, so there is nothing of that isolation that is found in New England where the farms are perhaps miles apart and travel to and from them often almost impossible during some periods of the year.

I was walking one day beside Lake Constance in the Swiss country near Meersburg, where the old castle of the Counts of

Meersburg hangs on the heights above the latter town. One naturally gravitates toward the church yards in the old world villages because sometimes there you find a bit of missing history of the place, and you often learn interesting facts from the care-taker, who seems to know everything of interest in the town. Among the graves there was one with rather an imposing monument. All the rest were marked by simple little wooden crosses. I asked the old man in charge who it was and he said he did not know; probably, however, somebody who had died before his time at the castle above. On the front of this monument was a crest of nobility and underneath the name Elizabeth von Drost-Hülshoff. I thought it would be very interesting to know who she was and why she was buried so far from her native part of the country, her name being of north German origin. After inquiry in Lucerne of people who had been at Meersburg, and learning nothing, I dismissed it. Some months after I was in Münster, the historic capital of Westphalia. Walking one day upon the old ramparts of the city, I came upon a statue of a woman with a quaint peculiar face, very much after the fashion of Mrs. Browning or Mrs. Hemans, the old-fashioned, classic, intellectual face. I looked naturally for the inscription beneath this statue and found the name "Elizabeth von Drost-Hülshoff, erected to her memory by her loving townsmen in appreciation of her worth, merit and ability." I learned there that she was a poet of the people, the German Longfellow of fifty years ago. She was in another sense the Adelaide Proctor of Germany; a poet of sentiment who appealed to the masses, and every German school girl of twenty-five years ago had learned passages of sentiment from Elizabeth von Drost-Hülshoff in the same fashion that our old fashioned school girls learned of her English contemporary. She lived in the old castle in the town of Münster and the castle was now in the possession of her nephew. This information given me willingly was followed by an invitation to drive to her home, which we did. We had to leave our carriage a mile away from the gates of the estate because of the badness of the roads; it being early in the month of a rainy April. When we reached the castle we found her nephew, the Baron von Hülshoff, a quaint old German gentleman in possession and he made us most welcome. What interested me most was the garden which she had planted herself and which was still a beautiful picture from the

windows of her small apartment at the south end of the house. One looked down upon a tiny lake on which floated live swans. There was a rich growth of ferns planted all about; in the front of the garden an arbor and a little rustic coffee house looked most attractive. The whole effect of, perhaps, the four or five acres of garden was the same effect she had arranged in 1830, and the fidelity of her family to her memory had kept that garden just as she had left it. It seemed almost, with her broken lute standing in the corner of the room, her portrait looking genially down upon us from the wall and little touches of her art here and there, that one was justified in imagining that she still lived there, and that her spirit pervaded the place. This was only a typical German garden; and repeated itself by Eder and Danube daily. However, there seemed to be between Hohenheim and Stuttgart, perhaps, the greatest variety of German garden cultivation that is found anywhere. The traveler sees the mountain, the forest, the dell, the cultivated garden, one succeeding the other, a beautiful ideal of scenery, and yet every acre of forest or garden is kept in order.

"Elizabeth in Her German Garden," which we have so enjoyed, is a fair idea of the German garden life and the German inspiration of a garden. However, we are not obliged, as a people, to cross the ocean to find gardens of perfection. We have what nature has given us at Yellowstone Park; we have the Adirondack Mountains, the White Mountains and the Green Mountains; and we have parks such as Central Park and the beautiful gardens of Boston, the Public Gardens.

There was a time when the natives of Massachusetts planted corn that they might cover the graves of their dead and conceal the number from the vigilant eyes of the Indians; and today there are some who wall in their beautiful gardens that they may conceal them from the eyes of the curious. This walling in of a garden is an unholy survival of the feudal days. The progress since that day, in the evolution of gardens, is as great as the progress in any other line of development or work in this country.

Speaking also of the debt one owes to one's native town to assist in making it more beautiful, I have in mind a little village in New England, where was very forcibly illustrated, within a year, the effect of a garden or no garden on the entire community. I remember passing occasionally one house where the poor mother

had little time to think of the plot of ground outside; she had her children to feed and her house to care for. I used to think of this garden as an index to every yard in the street, for they were all of the same character. One day I had occasion to spend a few hours in this village after an absence of months, and passing through that same little street I found that the tenant of this tiny house had moved away, and in her place had come one who realized the possibility of her half acre of garden. She had planted in good order the old fashioned flowers, the house had been painted, vines were trained over it, a little attempt at a rustic arbor had been made and a tiny brook that ran through the yard had been bridged over. This example had spread like a contagion down that entire street. Not a house but had acquired at least a window box or some blooming flower pots to grace its front. The effect of this one woman, having the taste and enterprise to beautify with her own hands her little home, had affected the entire neighborhood.

Some observer in the country said to me the other day, in deploring the incoming of the trolley car, that our country roads were no longer safe for driving as of old but made the remark, "However, the trolley has done a wonderful thing for the front yards." True this is and as we go through the villages and towns we find one person is led to improve because a score of others will ride by viewing.

There are some however who do not appreciate the joys of the country; they have lived so long in the noise and excitement of the great city that to them the country is synonymous with isolation and the blues. Let them once taste for a few months of the year the happiness of looking out from their own windows over a beautiful country, of watching for the first song of the birds and the first fragrant flowers of an early spring day and there will be experienced an elevation of the soul that will make one more patient and philosophical in life.

A certain clerical friend had however a peculiar experience in trying to put this love of nature into a good old woman. She had been for many years a trusted employee in his family, but having grown old and tired in service had gone to live in rooms of her own in a plainer quarter of the town. Her old master felt badly to think of her spending the hot months in the place where

she was, and so he went to her one day and said, "Jane, my wife and I are going to Europe for the summer and we are going to have a nice cool summer in England, but we can't go away and leave you here, and I want you to try country life while we are away." She said she was very willing; it impressed her as being a variety, at least. So he took her up the Hudson and placed her in a very comfortable farmhouse in care of a good kind hearted woman, paid her board and left her with a goodbye and a feeling that the poor old soul would at least have comfort and coolness. He returned in September, and proceeding up the Hudson, found that Jane had flown weeks before, in a very unceremonious manner back to town. There he went and found her sitting in her attic room in a five-story tenement house, surrounded by her household gods and happy. And he said, "Jane, how could you do this? You are not strong and you need fresh air; why didn't you stay in that beautiful home?" She looked at him and said, "It's a deal better living among people than living among stumps." Jane had grasped the country living in the narrow sense.

There is a philosopher of our modern day who says, "Show me the garden of a man and I will tell you his character and his morality," and perhaps the tribute we owe to the friends of gardening can best be summarized in the words of Charles Dudley Warner who says, "the man who plants a garden is a benefactor to the human race."

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EXPERIMENT STATION REPORTS WANTED.

The Massachusetts Horticultural Society is endeavoring to collect complete sets of the Bulletins and other publications of all the Agricultural Experiment Stations in the United States and Canada. Those named below are wanting, and any person having a spare copy will confer a favor by addressing the Librarian of the Society, Horticultural Hall, No. 300 Massachusetts Ave., Boston.

Alabama (Ag. and Mech. College Station).— Bulletins 4–6 (1884), 7–10 and 1–4 (1885), and 5–9 (1886). 7th Annual Report, for 1894, and 9th, for 1896.

Alabama (Canebrake Station).— All Bulletins later than 18, and all Annual Reports later than the 3d, for 1890.

Alabama (Tuskegee Station).—Bulletin 2.

Arizona. — 4th Annual Report, for 1893.

Arkansas.— Bulletin 1. All Annual Reports later than the 4th, for 1891, except the 8th, for 1895.

California.— Bulletins 32, 1878, and 1, 2, 3, 5, and 50, New Series.

Colorado.— Bulletin 3.

Connecticut (New Haven Station).—Bulletins 1 to 67, inclusive. Annual Reports for 1877 and 1879 to 1883, inclusive.

Florida.— Annual Report for 1892.

Indiana.— (Purdue Univ. School of Ag.). — Bulletin 1. College Reports 1 to 14, inclusive.

Iowa.—Bulletins 54, 55 and 56. (The original bulletins.)

Kentucky.— Bulletin 10.

Michigan.— Special Bulletins 1, 3 and 5. 6th Annual Report, for 1892-93 (contained in Report of Michigan Board of Agriculture, 1893).

Missouri. — Bulletins 9, 13, 15, 16, 19, 20, 25 and 26 of Old Series. All Annual Reports since the 1st, for 1888, except those for 1896 to 1898, inclusive.

New Jersey.— Bulletins 1, 4, 5, 15, 27 and 28.

New Mexico.— Eighth College Catalogue, 1897–98.

New York (Cornell). — 1st Annual Report, 1881–82, and all between that and 1888, except the 2nd, for 1882-83. (Reports of Agricultural Department of Cornell University.)

North Carolina. — Bulletins 1 to 56, inclusive, and 69, 2d ed. 1st to 7th Biennial Reports. Meteorological Division, Bulletin 2 (68*b*). Special Bulletins 1 (77*a*) and 4 (82*a*). Weekly Weather Crop Bulletins 1–21, 1888; 1–24, 1889; 1–25, 1890; 2 and 4, 1891.

North Dakota.— 4th Annual Report, for 1893.

Ohio.— All Bulletins of First Series, except 16, 17, 18 and 19.

Oklahoma. — All Annual Reports previous to that for 1896–97, except that for 1893–94.

Pennsylvania. — Annual Reports for 1869, 1872, 1879–80, 1881, 1882, 1883 and 1884. [All issued by the State College.] Bulletin of Information No. 1.

South Carolina.— All Bulletins of the Old Series (previous to 1888) on the work of the Experimental Farm of the South Carolina College. 3d Annual Report, for 1890, and 6th, for 1893.

Texas.—College Bulletins 1–5, 1883–1887.

Virginia. — 10th Annual Report for 1898-99.

Washington. — Bulletins 28 and 29. 6th, 7th and 8th Annual Reports, for 1895–96, 1896–97, and 1897–98.

West Virginia.— Special Bulletin — Potash and Paying Crops, 1890.

Wyoming.—Bulletins 2 to 4, 9 and 10.

Ontario Department of Agriculture, Toronto.—Bureau of Industries. — Agricultural Returns to the Ontario Bureau of Industries, Nov. 1882 (5th), Aug. 1883 (7th), and Nov. 1887 (20th).

Experiment Stati

TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1902.

PART II.

BOSTON:
PRINTED FOR THE SOCIETY,
1903.

☞ SEE LAST PAGE OF COVER.

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Robert Manning: from a Photograph taken 1890.

Courtesy of the American Pomological Society.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, April 5, 1902.

A duly notified stated meeting of the Society was held at eleven o'clock today, the President, O. B. HADWEN, in the chair.

As soon as the President called the meeting to order, Theodore H. Tyndale raised an objection, stating that the meeting had no Secretary. It was, however, stated by the Chair that Mr. Kidder had been appointed by the Executive Committee to succeed Mr. Manning, and when Mr. Tyndale was shown Section XIV he at once withdrew his objection.

The Secretary then read the records of the last meeting, both Mr. Manning's notes and the amplified records.

Richard M. Saltonstall moved, That the records as read by Mr. Kidder, the Secretary, of the doings of the Society at its Stated Meeting held January, 1902, are approved and are hereby adopted as the records of the Society, and that the Secretary be authorized and directed to sign said records.

William C. Strong protested against the statement appended to the records and moved, That that part of the record which now reads as follows, "The proposed Constitution and By-Laws as given below were approved by a majority vote and ordered to be entered upon the records for consideration at the Stated Meeting of the Society on the first Saturday in April," be canceled and instead thereof the following amendment be recorded, to wit:—

"The proposed Constitution and By-Laws as given below were briefly commented upon by Messrs. Elliott, Strong, and others, and further explained by Mr. Saltonstall. The previous question was then called for by Augustus P. Loring and was put to vote by the President, who declared it passed by a large majority. A motion to reconsider this vote failed to pass."

Francis Blake made remarks supporting the records as read. Mr. Strong defended his own motion.

The Chair stated that at the January meeting he had construed the call for the previous question as being intended to stop debate.

Arthur D. Hill now seconded Mr. Saltonstall's motion.

William H. Elliott asked for the re-reading from Mr. Manning's minutes of the January meeting of the motion to enter on the records the proposed new Constitution, which the Secretary then re-read.

Mr. Loring stated that his motion at the January meeting was to enter the proposed Constitution on the records.

Mr. Blake stated that he had then moved the previous question.

The Chair stated that he had put only the previous question.

Arthur D. Hill stated that this was strictly parliamentary, that the previous question had been put and also the motion to spread upon the records.

Mr. Strong stated that there had been a misunderstanding, that the previous question had passed and he thought no other.

Edward B. Wilder seconded Mr. Strong's motion in regard to expunging certain portions of the record as read.

Mr. Saltonstall stated that he had moved and read the proposed new Constitution, that after some discussion Mr. Blake had moved the previous question and that it was carried ; that Mr. Loring had moved that the Constitution be spread upon the records, and that Judge Hoitt had seconded that motion. He renewed his motion to approve the records as read by the Secretary.

Mr. Strong re-read his amendment.

Mr. Saltonstall stated that Mr. Strong's motion put off the whole question of the new Constitution so that no action could be taken on it that day.

Edwin H. Jose stated that what we wanted was to get the records correct, not necessarily the new Constitution.

Mr. Tyndale remarked that Mr. Loring should be able to give the correct version of the proceedings.

Mr. Loring stated that he had moved that the new Constitution be spread upon the records after Mr. Ware had taken the chair.

Judge Hoitt stated that he had been at the meeting, that Mr. Loring had moved, as stated, the new Constitution and that that was what was called for when the previous question was moved; that it was the same as the main question; that the Chair had put the main question for the previous question.

Mr. Strong's motion to amend the records was put and lost.

Mr. Saltonstall renewed his motion that the records be approved. Mr. Elliott entered a protest against their approval, and said he should contest it on legal grounds.

The Chair asked Mr. Saltonstall if he meant by his motion to shut off discussion, to which he replied that he most assuredly did not. Mr. Saltonstall's motion was then put and carried.

The report of the Treasurer was presented and General Appleton moved that it be accepted and spread upon the records. Benjamin P. Ware called for its reading. Mr. Blake moved that the Secretary have it printed and mailed to every member of the Society. This was voted, and the Chair called for its acceptance and it was voted to accept it.

The Chair stated that deferred and new business was in order.

Mr. Saltonstall moved, That the amendments to the Constitution and By-Laws proposed at the Stated Meeting of the Society duly held on the first Saturday in January, 1902, in favor of the adoption of which a majority of the members of the Society present at said meeting then voted, and which are entered on the records of the Society be and they hereby are adopted.

J. Allen Crosby moved that when the vote is taken the check list and ballot box be used and that the polls be open two hours.

The Chair appointed J. Allen Crosby, Aaron Low, and E. W. Wood as a committee to receive, assort, and count ballots. General Appleton moved that we proceed to ballot.

Mr. Jose thought we should have further discussion, though he stated that he was not opposed to the new Constitution.

Mr. Blake thought that everyone had had sufficient opportunity to become acquainted with the proposed Constitution.

The previous question was then called for by Mr. Jose.

Warren W. Rawson moved adjournment, which motion being put, the Chair declared himself in doubt and called for a show of hands and declared the motion lost.

The previous question was called for from all parts of the house.

The Chair declared that Mr. Ware had the floor and that everyone who wished should have a chance to talk.

William B. de las Casas called for the reading of the By-Law under which the Chair refused to recognize the previous question. The Chair read Section XXVII on Amendments.

Mr. Ware continued to talk against the new Constitution, in the midst of uproar. Mr. Saltonstall asked permission to say a word but Mr. Ware would not yield the floor. Philip A. Chase rose to a point of order but was not recognized by the Chair.

The previous question was again called for.

Mr. Saltonstall said that the new Constitution had been twice read at the January meeting, thoroughly discussed and spread upon the records, but he proposed that it be open to limited discussion for half an hour and that he was ready to answer any question in regard to it.

Mr. Strong thought that the meeting had better vote at once. Mr. Elliott wanted half an hour's discussion.

Mr. Jose withdrew his opposition to proceeding to a ballot.

Mr. Saltonstall wanted to amend the motion to keep the polls open two hours, to keeping them open but one hour, and so moved, but afterwards withdrew his motion.

The Chair stated that a motion to proceed to ballot seemed to him in order.

Mr. Elliott thought that some discussion should be allowed.

Mr. Blake again called for the previous question and it was carried.

Mr. Saltonstall moved that the house proceed to ballot upon the new Constitution.

The polls were opened at 12:38, and the ballots were YES and No.

Mr. Saltonstall asked that as many as could, come back at the end of the balloting, about 2:30 o'clock.

The Chair declared that after the vote was taken, no reconsideration could be had, so that no one need stay from any apprehension.

Mr. Ware, as senior Vice-President, now took the chair, as Mr. Hadwen was obliged to leave.

Mr. Crosby gave warning of the closing of the polls at two minutes before the time for them to close, and at 2 :38 announced that the polls were closed.

The ballot committee now proceeded to assort and count aloud in the presence of the meeting, but especially under the eyes of General Appleton, Messrs. Hill, Wilder, and Rawson, first counting every ballot and dividing the yes and no ballots into two piles. Then each pile was counted.

While the balloting was going on, the Chair read the printed ballot of candidates for membership, and stated that all the names would be voted on at once if no objection was made. The ballots were then collected by Edwin A. Hall and the Chair declared elected, as members of the Society:

Miss Caroline P. Atkinson of Brookline,
Robert M. Bailey of Dedham,
Clifton P. Baker of Dedham,
Edward W. Breed of Clinton,
John C. Bullard of Cambridge,
Norris F. Comley of Lexington,
Mrs. Lilian H. Farlow of Cambridge,
James Garthley of Fairhaven,
Richard C. Manning of Salem,
Fred. R. Mathison of Waltham,
Horace E. Ware of Milton.

The Secretary read the following letter:

Salem, Mass., February 21, 1902.

Charles E. Richardson, Esq.,
Treasurer of the Massachusetts Horticultural Society.
Boston, Mass.

Dear Sir: — The brother and sisters of the late Robert Manning, for many years Secretary and Librarian of the Massachusetts Horticultural Society, desire, through you, to express their gratitude to the members

who sent a beautiful wreath in the name of the Society, to the funeral on Wednesday, and to all, who, by their presence at the services, testified to the high esteem in which they held their departed associate.

Very respectfully,

RICHARD C. MANNING.

The Secretary also read a letter from Mrs. James Comley, thanking the members of the Society for their sympathy extended to her on the death of her husband.

Mr. Crosby now reported for the committee to receive, assort, and count ballots on the new Constitution, that there had been cast a total of three hundred and forty-seven votes, of which two hundred and four were yes and one hundred and forty-three no, and the Chair declared the motion was lost, a two-thirds' vote not having been cast for the new Constitution.

The meeting then adjourned.

NATHANIEL T. KIDDER, *Secretary.*

BUSINESS MEETING.

SATURDAY, July 5, 1902.

A duly notified Stated Meeting of the Society was held at eleven o'clock today. President HADWEN presided and there were forty members present.

President Hadwen read an invitation to this Society, from the Massachusetts State Board of Agriculture, to attend its fiftieth anniversary, which is to be observed at Horticultural Hall, Tuesday, July 22, 1902.

William C. Strong offered the following memorial of the late Secretary, Robert Manning:

IN MEMORY OF ROBERT MANNING.

Suddenly and without warning on the 17th of February, 1902, Robert Manning disappeared from us; ceased from his mortal and passed into the eternal life.

His membership with us dated from the year 1848, thus giving him fifty-four years of active service, a record which slightly exceeds that of any other member.

Still more significant is the fact that during this time he has been closely identified with the affairs of the Society, and of late years has given active and continuous service.

It was natural that the son of Robert Manning of Salem, the man who established a pomological garden and nursery in the year 1823, six years before the incorporation of this Society, and who was in advance of any other man in the country in the importation and introduction of new fruits, should inherit his father's love for the products of the garden.

Of course he became familiar with the different varieties of fruits and flowers in his early boyhood, and it is probably true that for years past he has been our best authority in identifying fruits.

His service in this direction has been of great value to our members and to the public.

Since the year 1876 he has been continuously chosen Secretary of the Society: and to this office has been joined the duty of editing the Transactions and also the duties of Librarian.

In the year 1878 he completed the History of the Society, a work which reflects equal credit upon the Society and upon the author. Indeed, the book will remain as a standard authority in the early introduction of horticulture into this country, and a comprehensive history of its progress up to the date of its publication.

In all this work of editing in these many years we have reason to hold in high regard the good taste, the carefulness, and the ability with which the work has been done.

Having been engaged in this daily work for the past twenty-six years, Mr. Manning came to be known as the most conspicuous personage of the Society, not alone by the members, but also by pomologists throughout the country, and by all who sought aid from our valuable library.

His knowledge in all departments was sure to be helpful. With modest and quiet dignity and intelligence, he so met his various duties as to contribute largely to the credit and usefulness of the Society.

It has been fortunate for the Society to have enjoyed the services of such a man, so pure and critical in his tastes, so faithful and conscientious in his work, so discerning of its best interests for so many years. Well may his memory be held in enduring regard.

It is therefore voted that this testimonial be entered upon the records of the Society and that a copy thereof be sent to the family of the deceased.

At the conclusion of his address Mr. Strong moved that it be entered upon the records of the Society and that a copy be forwarded to the family of Mr. Manning.

Benjamin P. Ware in seconding this motion said, that he had been on terms of intimacy with Mr. Manning for many years, and expressed his approbation of the testimony that had been presented as to the value of his long service in this Society. The memorial was then adopted.

President Hadwen, for the Executive Committee, reported the resignation of Nathaniel T. Kidder as Secretary and Librarian of the Society, and the appointment of William P. Rich to the office.

He also offered the following recommendation which was adopted: That an oil painting of the late Secretary, Robert Manning, be obtained at an expense not exceeding one hundred dollars.

Under the head of deferred and new business, William H. Spooner offered the following motion:

Voted: That a committee of seven members of the Massachusetts Horticultural Society be appointed by the President to revise and amend the Constitution and By-Laws now governing said Society, the object of said revision to be the better ordering and transaction of said Society's business affairs, and harmonizing the conflicting views of the members, with power to expend such sums of money for counsel fees, printing and distributing its report, and other contingent expenses as may be found advisable by said committee.

After having been seconded by Edward B. Wilder, the motion was re-stated by the President.

William H. Spooner then read a letter from Arthur D. Hill representing several members of the Society who were unable to be present at the meeting, and stating that he was "authorized to say on their behalf, that they cordially agree in the desirability of the suggested committee, and unite with me in hoping that by this means a plan can be adopted which will be satisfactory to the whole Society."

The motion was then unanimously adopted and the President appointed as the committee:

HENRY P. WALCOTT,
WARREN W. RAWSON,
JOHN K. M. L. FARQUHAR,
EDWIN H. JOSE,
C. MINOT WELD,
RICHARD M. SALTONSTALL,
WILLIAM H. SPOONER.

The Secretary read letters from Messrs. William E. Endicott and G. W. Humphrey offering their resignations as members of the Library Committee. On motion of Mr. Strong it was voted that the resignations of the two gentlemen be accepted and that the deep regret of the Society be conveyed to them.

On motion of Mr. Strong it was voted that the remaining members of the Library Committee be empowered to fill the vacancies.

The President offered the following names for the Committee on School Gardens and Children's Herbariums:

HENRY L. CLAPP, *Chairman*,
WILLIAM E. C. RICH, *Secretary*,
MRS. H. L. T. WOLCOTT,
MISS KATHARINE W. HUSTON,
CHARLES W. JENKS,
HENRY S. ADAMS,
WILLIAM P. RICH.

On motion of Mr. Strong they were elected.

Mr. Spooner moved, and it was voted, that the Committee on Flowers have power to fill the vacancy on its committee caused by the death of James Comley.

Charles W. Jenks, Chairman of the Committee on Native Plants, reported that he found it difficult to secure members to serve on that committee. On motion of Mr. Spooner, Mr. Jenks was empowered to fill the vacancies.

A communication from Joseph H. Woodford, Chairman of the Committee of Arrangements, addressed to the Executive Committee was read by the Secretary.

It called attention to the lack of seating accommodations in the Exhibition Hall, and offered as a remedy the suggestions made in the last report of the Committee of Arrangements. As this report was not accessible at the time, Mr. Strong moved that the communication of Mr. Woodford be referred back to the Executive Committee.

Thomas Harrison moved an amendment, that the committee prepare a plan of the improvements it desires to have made.

The amendment was accepted and it was then voted to refer the communication back to the Executive Committee.

The Committee of Arrangements also announced that it had decided to move forward one week all the exhibitions scheduled for July and August and, on motion of Mr. Strong, it was voted that the matter be referred back to the committee with full powers to act.

On motion of Mr. Spooner it was voted that the portrait of the late J. D. W. French, which has been presented to the Society by his family, be accepted, and that the thanks of the Society be extended to the donors.

Action was taken on the death of Messrs. H. H. Hunnewell and James Comley. On motion of Mr. Strong it was voted to request Benjamin C. Clark of the Executive Committee to prepare a memorial of the late Mr. Hunnewell and, on motion of Mr. Harrison, it was voted that Patrick Norton be requested to present a memorial of the late Mr. Comley.

The following named persons, having been recommended by the Executive Committee for membership in the Society were, on ballot, duly elected:

PAUL R. BLACKMUR of Quincy,
JOHN W. DUNCAN of West Roxbury,
HERBERT H. DYER of Cambridge,
LUCIUS H. FOSTER of Dorchester,
MISS ELLA F. HILDRETH of Lowell,
ALLEN HUBBARD of Newton Centre,
ELLERTON JAMES of Nahant,
MRS. OLIVIA B. JAMES of Nahant,
N. W. T. KNOTT of Waban,
E. L. LEWIS of Taunton,
MISS AMY LOWELL of Brookline,
DAVID LUMSDEN of Jamaica Plain,
EDWARD MACMULKIN of Boston,
GEORGE MELVIN of South Framingham,
ALEXANDER MONTGOMERY, JR. of Natick,
JAMES H. MORTON of Boston,
EDWARD POWELL of Taunton,
JOHN PRITCHARD of Newtonville,

WILLIAM A. PROSSER of Medford,
ALBERT H. ROFFE of Newton Centre,
CHARLES SPRAGUE SARGENT, JR. of Brookline,
RICHARD CLIPSTON STURGIS of Boston,
EDWARD J. WELCH of Dorchester,
EZRA H. WHEELER of Dorchester,
GEORGE WILLIAM WHEELWRIGHT of Jamaica Plain.

Communications were read as follows:—

From the Eastern New York Horticultural Society inclosing the program of its annual meeting and stating it would be pleased to have the presence on that occasion of delegates from this Society. On motion of Mr. Spooner it was voted that the Committee on Fruits be empowered to name such delegates.

From the Horticultural Society of New York requesting this Society to name delegates to the International Plant Breeding Conference to be held in New York City, September 30, October 1 and 2, 1902. On motion of Mr. Wilder it was voted to refer the subject to the Executive Committee.

Mr. Spooner moved and it was voted, that when this meeting adjourns it be to August 2, 1902. He also stated that at the January meeting action was taken regarding the disposal of the three granite statues of the old hall. They are at present stored in the yard of the Boston Storage Warehouse Company at an expense of sixty dollars a year. An offer of one hundred dollars has been received for them. Benjamin P. Ware arose and said that he would give one hundred and fifty dollars for them.

Mr. Spooner moved and it was voted, that the matter be referred back to the committee having it in charge.

The meeting then adjourned.

WILLIAM P. RICH, *Secretary.*

BUSINESS MEETING.

SATURDAY, August 2, 1902.

An adjourned meeting of the Society was held at eleven o'clock today. President HADWEN presided and there were twenty-five members present.

The Library Committee reported the appointment of Charles W. Jenks and T. Otis Fuller, to fill the vacancies caused by the resignations of Messrs. Endicott and Humphrey.

The Secretary reported the death of Daniel T. Curtis, who was for many years an active member of this Society.

Remarks concerning Mr. Curtis were made by Jacob W. Manning, Thomas Harrison, and the Secretary. It was voted that these three members be appointed a committee to prepare a memorial of Mr. Curtis.

The President appointed the following named members a committee to nominate candidates for Officers and Standing Committees for the ensuing year:

WILLIAM H. SPOONER, *Chairman*,

ARTHUR H. FEWKES,	BENJAMIN C. CLARK,
E. W. WOOD,	AARON LOW,
J. WOODWARD MANNING,	PATRICK NORTON.

The following named persons, having been recommended by the Executive Committee for membership in the Society were, on ballot, duly elected:

HAROLD J. COOLIDGE of Boston,
ARTHUR E. DAVIS of Wellesley,
MRS. ARTHUR E. DAVIS of Wellesley,
MRS. ROBERT C. HOOPER of Boston,
G. D. LOW of Boston,
E. PREBLE MOTLEY of Boston,
MRS. ELLEN R. PICKMAN of Boston.

Adjourned to Saturday, September 6.

WILLIAM P. RICH, *Secretary*.

BUSINESS MEETING.

SATURDAY, September 6, 1902.

An adjourned meeting of the Society was held at eleven o'clock today. President HADWEN presided, and there were twenty members present.

Patrick Norton offered the following memorial of the late James Comley, which was read by the Secretary.

IN MEMORY OF JAMES COMLEY.

James Comley, the subject of this sketch, was born at Derry Hill, England, May 29, 1835. His father's freehold adjoined the estate of the Marquis of Landsdowne in Bowood.

In his early childhood he became very fond of horticulture, so much so that he was apprenticed for six years to learn the profession of gardening in all its branches. But at the end of five years he had become so proficient, under the instructions he had received at the Marquis of Landsdowne's establishment, that he was allowed to graduate a fully competent gardener.

Shortly after this he came to America, and becoming acquainted with Mr. Evers, a copartnership was formed under the name of Evers & Comley, as flower merchants and decorators. They had the honor of decorating the Revere House when the Prince of Wales was there, also the Boston Theatre, on the occasion of the grand ball given in honor of the Prince, now King Edward VII of England.

After remaining in business in Boston for several years, he removed to Worcester, where he devoted himself to the general florist's business for three years and then returned to Boston.

About this time he became acquainted with the late Francis B. Hayes. This was in 1870 and Mr. Comley was in Mr. Hayes' employ for many years after.

In the year 1892 Mr. Comley took a trip to Japan and on his return brought with him many rare plants and seeds from that interesting country.

He has been also very fortunate in producing some fine seedling roses, rhododendrons, and other plants, which added materially to his reputation as an enthusiastic horticulturist.

Mr. Comley was a large exhibitor at the shows of the Massachusetts Horticultural Society and his exhibits of rare and curious flowers and plants added very materially to the success of the exhibitions.

Mr. Comley was a man one could depend upon, for his word was as good as his bond. He was genial in his intercourse with mankind and generally beloved by all who knew him.

His last exhibition before the Massachusetts Horticultural Society was at the Chrysanthemum Show in the fall of 1901, when he was awarded a silver medal.

While busily engaged in the vocation he loved, apparently in good health, on February 1, 1902, he suddenly expired, deeply regretted by all who knew him. *Requiescat in pace.*

PATRICK NORTON.

On motion of William H. Spooner, it was voted that the memorial be accepted and referred to the Committee on Publication.

The Secretary, as Chairman of the Committee appointed to present a memorial of the late Daniel T. Curtis, reported as follows:

IN MEMORY OF DANIEL T. CURTIS.

Daniel T. Curtis was born at Cambridge, Massachusetts, January, 1815, and died at Dorchester, July 26, 1902, at the ripe age of eighty-seven years and six months.

He was elected a member of the Massachusetts Horticultural Society in 1849 and for a period of thirty years following was actively engaged in its work. He was for eight years Chairman of the Committee on Vegetables, in each of which he rendered a full and faithful report.

He was also associated at various times, until 1878, with the Committees of Arrangements, Library, and Fruits, and was one of the committee of ten appointed to make arrangements for the laying of the corner stone of the Tremont Street Horticultural Building, August 18, 1864.

In all these years his interest in the Society was manifested by his frequent contributions to our exhibitions of plants, flowers, and vegetables, as well as by the great amount of work which his connection with the several committees mentioned must have entailed.

He was engaged in the seed and garden supply business in Boston for many years and was for a long period associated with Mr. E. W. Cobb of Newton, under the firm name of Curtis & Cobb, finally going out of business in 1878.

After a residence of many years in Boston, he lived for a time at Sharon, then at Medford, and the closing years of his long life were spent at Dorchester where he died.

He married about the year 1850, Mrs. Sarah Dupee of Boston, who has been several years deceased, leaving no issue by him.

His parents have long since departed and a large family of brothers and sisters have also all passed away in advance of him, and thus he leaves no near relatives excepting nephews and nieces.

To Mr. Cobb, his business partner for twenty-three years, your committee is indebted for much of the material of this sketch of Mr. Curtis' life.

Mr. Cobb testifies to the character and worth of his old friend and associate in the following tribute to his memory:

"He was the most genial of men, unselfish to a fault, nothing apparently giving him more pleasure than to be able to bestow a favor upon an acquaintance, making friends easily and always popular with those with whom he came in business contact. He had also to a remarkable degree the confidence and esteem of very many of the older, prominent citizens of Boston, and I may say also of those of many other sections of New England, in every walk of life, who were numbered among his business patrons."

By reason of the infirmities of advancing age and the fact that he had outlived nearly all of his former associates, he had long since passed from the stage of active work, and now that his life's record is closed, we offer this tribute to the memory of one of the great company of earnest men, through whose interested labors in the past, our Society has attained its present high position.

WILLIAM P. RICH,
JACOB W. MANNING,
THOMAS HARRISON. } *Committee.*

On motion of Mr. Harrison it was voted that the memorial be accepted and referred to the Committee on Publication.

William H. Spooner, Chairman of the Nominating Committee, reported a printed list of candidates for Officers and Standing Committees for the year 1903.

Benjamin P. Ware moved that the report of the Nominating Committee be accepted and his motion was seconded by Mrs. E. M. Gill.

John K. M. L. Farquhar suggested that action on the report be delayed until an expression of opinion regarding it could be had from the new committee on the revision of the Constitution.

He thought that fewer members on some of the Standing Committees would be desirable, and that better results would be obtained from a small committee of three experts, who should receive a more liberal compensation for their services than is at present paid. He also stated that another list of candidates might be presented and, if so, it would be with the idea of promoting the best interests of the Society.

Mr. Ware, in reply, remarked that we are acting under the present Constitution and he saw no other way for the committee to act except in accordance with it.

The President then stated the motion of Mr. Ware, which was that the report of the Nominating Committee be a pted, and it was so voted.

On motion of Mrs. H. L. T. Wolcott it was voted, that the Nominating Committee be continued and have power to fill any vacancies that may occur.

A communication was read announcing the death of George W. Willis of Chelsea, and the Secretary offered the following resolution which was adopted:

The Massachusetts Horticultural Society learns with deep regret of the death on August 26, of George W. Willis, for thirty-four years a valued member of this Society, and we hereby extend to his family the expression of our appreciation of his interest in our work, and also our sincere sympathy in the loss they have sustained.

A letter from Richard C. Manning of Salem was read, acknowledging the receipt of a copy of the memorial of the late Secretary, Robert Manning, and thanking the author of the memorial and the members of the Society for their grateful and considerate action in testimony of their value of the services and their respect and regard for the character of our brother, the late Secretary.

The President spoke on the subject of the disposition of the three granite statues of the old building and, on motion of William H. Spooner, it was voted that the committee to which the matter was referred be discharged and the subject referred to the Executive Committee with power to act.

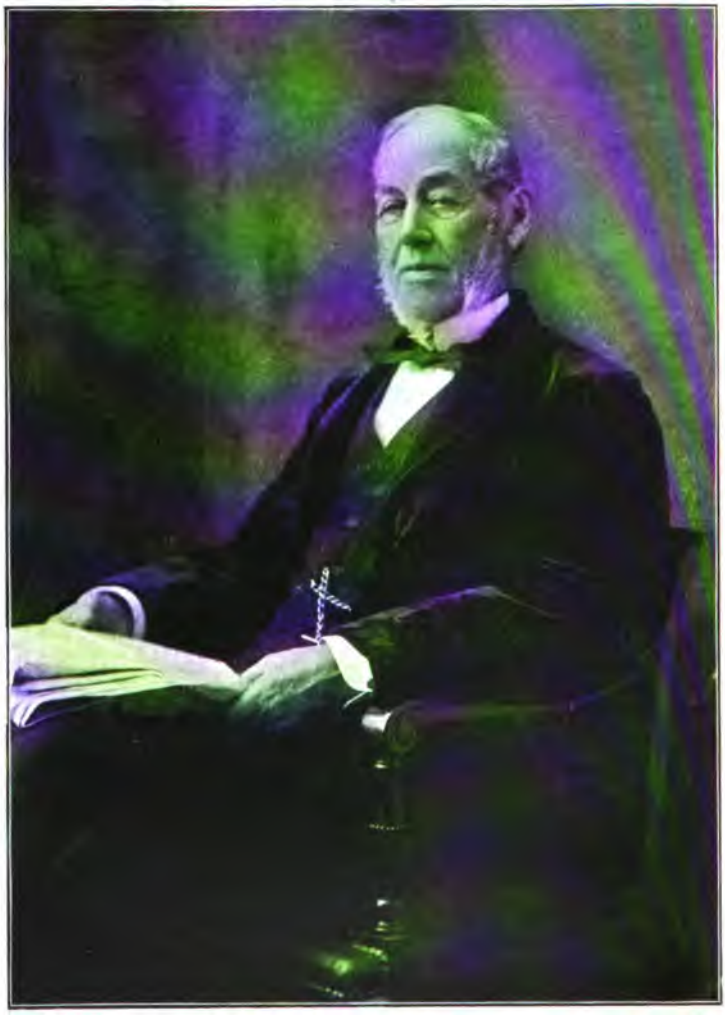
The meeting was then dissolved.

WILLIAM P. RICH, *Secretary.*

BUSINESS MEETING.

SATURDAY, October 4, 1902.

A duly notified Stated Meeting of the Society was held at eleven o'clock today, it being the Annual Meeting for the choice of Officers and Standing Committees for the ensuing year. President HADWEN presided and there were about forty members in attendance.



Horatio Hollis Hunnewell.

Courtesy of "Our Town", Wellesley, Mass.

William H. Spooner moved, that, as the Nominating Committee had no further changes to make in the list of nominations reported in the printed ballot, its report be accepted and the Committee discharged, and the motion was carried.

The Executive Committee reported that the Treasurer of the Society had received $800 from the Executors of the will of Benjamin H. Pierce of Watertown, the principal to be kept intact, the income to be used for the introduction of new fruits.

On motion of Mr. Spooner it was voted that the bequest be accepted.

On motion of William C. Strong it was voted to extend an invitation to the American Pomological Society to hold its next Session in the building of the Massachusetts Horticultural Society, in September, 1903, and to offer such use of the Halls of the Society as may be necessary.

The Executive Committee also reported a recommendation for the appropriation of one hundred and fifty dollars for the Library Committee, for the purchase of two card-catalogue cases with the necessary accessories, and on motion of Benjamin C. Clark, the recommendation was adopted.

On motion of Mr. Clark it was voted that a committee of three be appointed with full power to procure a portrait of the late H. Hollis Hunnewell. The President appointed as the committee, Benjamin C. Clark, William C. Strong, and William H. Spooner.

Mr. Clark presented and read the following memorial of the late H. H. Hunnewell:

HORATIO HOLLIS HUNNEWELL,

Born July 27, 1810.

Died May 20, 1902.

By BENJAMIN C. CLARK.

It is a pleasant custom of our Society that however eloquent and appreciative may be the eulogies of our members elsewhere, we reserve for the pages of our own record the memorial tribute, however humble, of those

who have given marked evidence of their interest in the aims and objects for the promotion of which our organization has existed for nearly three-quarters of a century.

It is not often that we have the opportunity to commemorate the life and services of a man like Mr. Hunnewell, of whom it is not too much to say that we have never lost a member who has left our State as well as our Society under greater obligations. In thinking of him one is reminded of what is told us of Solomon, that "God gave him wisdom and understanding exceeding much and largeness of heart, even as the sand that is on the sea-shore." "He spake of trees, from the cedar tree that is in Lebanon even unto the hyssop that springeth out of the wall." And in the gift of wisdom Mr. Hunnewell found that "length of days was in her right hand and in her left hand riches and honor."

Horatio Hollis Hunnewell was born in Watertown, July 27, 1810. His father, Walter Hunnewell, a graduate of Harvard, was a physician and practised medicine in Watertown for a period of sixty years. Dr. Hunnewell married Miss Susanna Cooke, of Watertown, and was the seventh generation from Roger Hunnewell who came from England to this country about the year 1640. Mr. H. H. Hunnewell, the subject of this sketch, received an excellent education in the schools of Watertown and later in France, and in 1893 Harvard University conferred upon him the honorary degree of A. M.

At the age of fifteen years, Mr. Hunnewell went to Paris and ten years later became a partner in the banking house of Welles & Co., a firm well known to all American travelers. In the same year he married Isabelle Pratt Welles, daughter of the Hon. John Welles, of Boston, remaining in Paris until his return to the United States when he established the house of H. H. Hunnewell & Sons, in Boston. In passing we note from various sources the great interest displayed by Mr. Hunnewell's father-in-law in farming matters. His reports on Orchard and Forest Trees and Grasses, on Milch Cows, Heifers, etc., on Woodland and Forest Trees, and also on Asparagus, on experiments, discoveries and inventions, all show him to have been a man of enlarged views. Mr. Welles was one of the earliest members of our Society, being a subscriber before its organization in 1829, continuing his membership until his death in 1855.

To return to Mr. Hunnewell. It is a singular fact that until he was over forty years of age he never manifested the taste for arboriculture and horticulture in the direction in which he became so proficient. Although taking an active part in business, being largely interested in Western railroads and a director in many financial institutions, he always found time to devote to his favorite pursuits and he was never happier than when he was extending his generous hospitality to his many visitors. His benefactions were numberless. The gifts of a town hall, library, and park to the town of Wellesley were among them. Perhaps one of the best evidences of his kindness of heart was his habit, as stated by the Chairman of the Board of

Selectmen, when leaving for his winter home in Boston, of saying to the Town Clerk, "Be sure and do not allow any one to suffer during cold weather; send them whatever they need and I will pay the bill." *Ex uno disce omnes.*

No one who was present will ever forget the twenty-third of May, the day of Mr. Hunnewell's funeral. The simple service, the flags at half-mast, the places of business all closed, testified to the universal respect for him who had gone from our presence and entered into the higher life through "the portal we call death," after nearly ninety-two years which, to use his own language, "he had been permitted to pass by the love of the Lord, his Creator, in this fair land." As one gazed at the solitary oak which, with the exception of the pines, was the only tree upon the land when Mr. Hunnewell commenced his labors at Wellesley, he could realize the force of the expression of "the wilderness blossoming as the rose;" every tree and every blossom seemed to testify of his taste and care.

No man could have been a greater benefactor than was Mr. Hunnewell to our Society. His fund established for annual prizes, his contributions to our exhibitions, his personal labors on our committees, all will cause his name and memory to be held in grateful recognition for many a long year to come. In closing, I venture to borrow these beautiful lines from "Our Town" for July, 1902, a memorial number of a monthly magazine printed at Wellesley.

H. H. H.

Each year, when sun and shower and lengthening days
Brought back to earth her sweetness and perfume,
A gracious presence trod our quiet ways
And joyed in all their loveliness and bloom.

A grave, observant man: whose gaze serene
Looked out upon the world and found it good.
The faithful steward of a Power unseen
For wide and wise beneficence he stood.

To lesser things he gave a thoughtful care;
The humblest need or sorrow touched his heart.
He made the waste a garden but to share
With friend and stranger all its perfect art.

Life gave him generous gifts in ample store
Of all the things that men do greatly prize;
Health, wealth, the joys of home, the mystic lore
Of tree and flower unveiled before his reverent eyes.

Blessing and blest he lived. The happy years
Slipped softly into shadow, and their end
Was peace. For him all joy, for us the tears.
Our world has lost a helper and a friend.

— A. C. W.

On motion of Mr. Spooner it was voted that the memorial be adopted and referred to the Committee on Publication and that a copy be sent to the family of Mr. Hunnewell.

On motion of Mr. Clark it was voted that the polls at the annual election be kept open for two hours and, on motion of Mr. Strong, it was voted that the polls be opened at 11 : 30 A. M. and closed at 1 : 30 P. M.

The President appointed Aaron Low, E. W. Wood, and Edwin A. Hall a committee to take charge of the check list, and to receive, assort, and count the ballots.

The following named persons were elected to membership in the Society :

MRS. HENRY L. HIGGINSON of Boston,
FRANK H. EVANS of Malden,
F. L. OAKES of Newton,
CHARLES L. HOVEY of Waban,
GEORGE B. LEIGHTON of Monadnock, N. H., and St. Louis, Mo.

On motion of Mr. Spooner it was voted that when this meeting adjourns it be to the first Saturday in November.

The following communications were read by the Secretary:

From Mrs. R. A. Martin of Chelsea, acknowledging the receipt of the resolution of the Society respecting the death of her father, George W. Willis.

From Henry John Elwes, F. R. S., of Cheltenham, England, requesting permission to republish, in the Journal of the English Arboricultural Society, a Lecture on the Propagation of Trees, by Jackson Dawson, published in the Transactions for 1885, and also informing the Society that he was engaged in collecting material for a large work on the trees of Great Britain. He solicited the interest of the Society in this undertaking.

On motion of Benjamin P. Ware it was voted that the request of Mr. Elwes be granted.

The death of Lamont G. Burnham of Essex was announced and, on motion of Mr. Low, it was voted that a committee be

appointed to prepare the customary record of Mr. Burnham's life. The President appointed as that committee Aaron Low, Benjamin P. Ware, and Henry G. Jordan.

President Hadwen called the attention of the members to the portrait of the late Robert Manning, which had been placed in the Library.

The President being obliged to leave called Vice-President Ware to preside during the rest of the meeting, and at a few minutes after half-past one o'clock the committee on the voting lists reported sixty ballots cast, and that the list of candidates reported by the Nominating Committee had been elected.

The result of the election was also stated by the President *pro tempore*, who declared the candidates to be the duly elected Officers and Standing Committees for the year 1903.

Adjourned to Saturday, November 1.

WILLIAM P. RICH, *Secretary*.

BUSINESS MEETING.

SATURDAY, November 1, 1902.

An adjourned meeting of the Society was held at eleven o'clock today. President HADWEN presided and there were fifteen members present.

The Executive Committee reported a recommendation that the following amounts be appropriated for prizes and gratuities for the ensuing year:

For Plants	$1,500.00
" Flowers	1,875.00
" Native Plants	125.00
" Fruits	1,275.00
" Vegetables	900.00
" Gardens and Greenhouses	375.00
" School Gardens	75.00

These amounts are twenty-five per cent less than those appropriated for the year 1902.

On motion of William H. Spooner it was voted that the consideration of the report of the Executive Committee be postponed to the next meeting of the Society.

Thomas Harrison spoke of the work of the Committee on Lectures and Publication and thought that the Chairman should receive compensation for his services. He moved that the Chairman of the Committee on Lectures and Publication be paid one hundred dollars annually, and the other members one dollar a day, for such time as they devoted to the work of the Committee.

William C. Strong offered some remarks on the motion to pay salaries to the Committee on Lectures and Publication. He thought it an unfortunate time to bring up the subject as the Society was facing a deficit of some $4,000 a year.

The motion was not seconded.

The following named persons were elected to membership in the Society:

ARTHUR NIXON of Taunton,
CHATTERTON WARBURTON of Fall River,
GEORGE F. FABYAN of Brookline,
EDGAR HOWARD DOANE of Wenham,
OSCAR HOSMER of Wenham,
ALFRED PRESSON of Gloucester,
RICHARD D. KIMBALL of Waban.

A communication from Francis H. Appleton was received, containing a check for $123.61, the proceeds of the Opening Flower Show of 1901. It was requested that the amount be expended for library purposes.

On motion of Mr. Harrison it was voted to accept the communication and check of Mr. Appleton and to devote the proceeds as indicated.

A communication was received from the Massachusetts Fish and Game Protective Association requesting the Society to send one or more delegates to a convention to be held in Boston on November 13.

On motion of Edwin A. Hall it was voted to accept the communication and to appoint two members as a committee to represent the Society on that occasion. The President appointed as the committee, Benjamin C. Clark and Charles E. Richardson.

Adjourned to the first Saturday in December.

WILLIAM P. RICH, *Secretary.*

BUSINESS MEETING.

SATURDAY, December 6, 1902.

An adjourned meeting of the Society was held at eleven o'clock today. President HADWEN presided and there were twenty members present.

The Secretary read the Annual Report of the Secretary and Librarian. J. Woodward Manning, Chairman, read the Annual Report of the Committee on Flowers.

E. W. Wood, Chairman, read the Annual Report of the Committee on Fruits.

Warren H. Heustis, Chairman, read the Annual Report of the Committee on Vegetables.

Arthur H. Fewkes, Chairman, read the Annual Report of the Committee on Plants.

Patrick Norton, Chairman, read the Annual Report of the Committee on Gardens.

William H. Elliott, Chairman of the Committee on Establishing Prizes, presented the proposed Schedule for 1903.

William H. Spooner, Delegate to the Massachusetts State Board of Agriculture, made his Annual Report.

These reports were separately accepted and referred to the Committee on Publication.

The following named persons having been duly recommended by the Executive Committee were, on ballot, elected to membership in the Society.

EMIL JOHANSSON of Brookline,
CHARLES E. HELLIER of Boston,
HERBERT W. RAWSON of Arlington.

The Secretary reported the death of Henry Probasco and offiered the following motion which was voted:

The Massachusetts Horticultural Society learns with deep regret of the death on October 26, of Henry Probasco of Cincinnati, Ohio, for eleven years a Corresponding Member of this Society, and we hereby express to his family our appreciation of his interest in this Society and our sincere sympathy in their bereavement.

On motion of Patrick Norton the thanks of the Society were voted to Edward Hatch, Esq., for the special prizes offered by him for fruit-houses.

On motion of J. Woodward Manning it was voted to express the thanks of the Society to Mrs. J. Montgomery Sears, Messrs. Kelway and Sons, and The Society of American Florists for the various prizes offered by them.

On motion of William H. Spooner it was voted that the report of the Executive Committee referring to the appropriations for prizes and gratuities for 1903 be laid upon the table for final action at the January Meeting.

The meeting was then dissolved.

WILLIAM P. RICH, *Secretary.*

ROBERT MANNING.

BY WILLIAM P. RICH.

To record the life work of Robert Manning would be to recite the history of the Massachusetts Horticultural Society for nearly the whole period of its existence.

His father, of the same name, was one of the founders of the Society and was present and elected a vice-president at its first meeting for organization, March 17, 1829.

The senior Robert Manning was a pioneer in this country in the extensive cultivation of fruit trees for commercial purposes, and began as early as 1817 the establishment of an orchard and nursery at Salem, Massachusetts, for the purpose of growing a large number of fruit trees, of various kinds, in order to test by cultivation, their adaptability and hardiness for the New England climate. He procured and distributed many new varieties of fruits from Europe and got together the largest collection of fruit trees then known in the United States, having, it is said, one thousand varieties of pears alone. For many years he was the leading authority in the country on the cultivation and nomenclature of fruits.

His little book on Fruit Trees, published in 1838, of which several editions are in the library of the Society, was the precursor of the long line of such publications continuing to the present day.

Into this pomological garden at Salem, the son Robert was born July 6, 1827, and in the midst of these surroundings was his whole life passed.

It is related that before he could plainly pronounce the long name of the Society he would say to his father, when a new or interesting variety was under discussion in the family circle, "Take it to the horticultural exhibition."

In his early years he was frequently called upon to take a basket of fruit to the exhibitions at Boston and so he felt, as he often expressed it in later years, that he was "born into the Horticultural Society."

As a boy he was of a somewhat reserved nature, quiet and studious, not especially interested in sports, but fond of walking, that recreation of observant and thoughtful minds. He was ingenious in mechanical work, interested in general literature, especially history, biography, and poetry, and a youth of high moral standards; qualities of character similar to those of his renowned cousin, Nathaniel Hawthorne.

At the age of eleven years he was graduated from the North Salem Grammar School and in 1838 entered the English High School of Salem, completing the course in 1841.

The quality of the young man and his record at that time are shown by the fact of his being engaged for the ensuing term as an instructor in the school.

The death of his father the following year, 1842, brought him face to face with his life's work and to that end he had been trained and instructed by his father.

Although a boy of fifteen, he and his brother Richard at once took up the work of the pomological garden and carried it on for many years, and the name Robert Manning which had been from the founding of the Society a familiar one upon its records was to be continued for a further period of nearly sixty years.

The first exhibition of fruits by Robert and Richard, after their father's death, is recorded in the Transactions under date of September 13, 1843, when they exhibited a large number of varieties of pears, apples, peaches, and plums.

The report of the fruit committee on the exhibition of September 18, 1844, contains the following paragraph:

"We are glad to see the sons of the lamented Manning so much engaged in the favorite pursuit of their father. They have our best wishes that their efforts may be crowned with success. Notwithstanding their soil is not rich or calculated to produce large specimens, yet their collection of pears obtained the second prize for the greatest number of kinds and the best grown."

At the exhibition held September 16, 1845, Robert Manning of Salem contributed two hundred and forty varieties of pears, all named. At the Nineteenth Annual Exhibition of the Society held September 22, 1847, he showed two hundred and fifty-five varieties of pears, and on September 2, 1848, two hundred and sixty

sorts of pears and one hundred and eighteen varieties of apples. In 1848 he became a life member of the Society and was appointed one of the standing committee on fruits, serving in this capacity at different times for many years.

During the fifteen or more years following we find him occupied with his pomological garden, displaying its products at the various exhibitions of the Society, and making an occasional visit to the conventions of the American Pomological Society with his friend, Marshall P. Wilder.

He had an intimate acquaintance with the leading pomologists of the country and attended the first meeting of the American Pomological Society in 1849, on which occasion, although but twenty-two years old, he was appointed on a committee to prepare a list of fruits for general cultivation of which committee Andrew J. Downing was chairman.

In 1869 he was appointed editor of Tilton's Journal of Horticulture and contributed to its pages many articles on fruits and plants. His connection with this magazine was terminated by its discontinuance in 1871.

In 1874 he was engaged to edit the Transactions of the Massachusetts Horticultural Society, the office of editor being then established under the presidency of William C. Strong.

He served in this position the following year when the office of editor being then discontinued, he was elected Secretary of the Society, his first annual report being that for 1876. From this date until his death he was prominently identified with and actively employed in the conduct of the Society's affairs.

In 1880 under his supervision and editorship was brought to a completion the "History of the Massachusetts Horticultural Society," concerning which the committee in charge of the work remark in their preface, "The Editor, Robert Manning, has brought to the work the utmost faithfulness and constant endeavor to secure strict accuracy. The investigation of records, often obscure, has required much time and labor and unwearied application, and to him is due the credit of bringing the history to its present form." Here it may be stated that all of his editorial and clerical work was characterized by much literary ability, good taste, and above all, by painstaking effort in verifying references and substantiating statements of facts.

He had a most retentive memory and was from his boyhood diligent in storing away in his mind interesting facts and poems. He was especially fond of poetry and could repeat the whole of Scott's Lady of the Lake, the greater part of the Lay of the Last Minstrel, Marmion, and many of the poems of Whittier, Bryant, and Longfellow, besides those of other authors.

In later years this practice, with his wide reading of standard literature, especially in history, biography, and travel had given him a mine of information from which he was wont to draw as occasion required. He had also a keen appreciation of the humorous side of life, and took delight in the hearing or relating of a good story.

The great library of the Society to which his father contributed its first volumes was developed under his care and the generous interest of its friends until it has become one of the notable horticultural libraries of the world.

He was familiar with every book and guarded them with almost jealous solicitude, yet always ready and helpful to aid the inquiring student in searching out the treasures they contain.

Although his special interest was in pomology, he was well versed in other departments of horticulture, to which, with his familiarity and acquaintance with horticulturists and horticultural literature, he brought the ripe fruitage of his own long and practical experience.

The value of his pomological work has been recognized in the following awards of medals which have been bestowed upon him.

1845. Silver Medal from American Institute, N. Y., to Robert Manning for one hundred choice varieties of autumn and winter pears from his own grounds.

1855. Silver Medal from Massachusetts Horticultural Society to Robert Manning for collection of pears.

1876. Bronze Medal for a collection of fruits exhibited at the U. S. Centennial, Philadelphia.

1881. Silver Medal for eminent services in Pomology, from the American Pomological Society.

1900. Bronze Medal for work in Pomology, Paris Exposition.

In his home life he was contented in the companionship of his sisters, and his leisure hours were occupied with his garden and his trees. Thus the years glided serenely by until the last Saturday night came that called him from his accustomed duties.

Early on the following Monday morning, February 17, 1902, the final summons came suddenly, and in the home where he was born he passed away at the age of seventy-four years and seven months.

It is fitting that upon the pages of these Transactions, which for twenty-eight years have borne witness to his faithful service, there should be placed the tribute of appreciative remembrance.

REPORT

OF THE

COMMITTEE ON PLANTS

FOR THE YEAR 1902.

By ARTHUR H. FEWKES, CHAIRMAN.

Your committee is pleased to report continued interest in this department notwithstanding predictions to the contrary. The past year has been an experimental one in some respects, as it was the first year during which exhibitions were held in our new hall. The discouraging conditions under which the exhibits were obliged to be made seem not to have deterred exhibitors from making fine displays, although many complaints have been made of the inharmonious effects produced by the unfortunate color of the walls, against which many of the plants were obliged to be staged.

The year has been fruitful in new introductions, many of them of the exhibitors' own productions, and the awards for these show that the year is not behind previous ones in this respect.

It is noticeable also that many of the awards have been made on Saturdays, showing that the exhibitors appreciate the weekly shows, knowing that it provides a chance for them to offer their plants at any time when they may be at their best. It surely would be a great loss to abolish this privilege, not only to the owners of the plants, but to the public also.

At the large exhibitions we have been mostly dependent upon a few old exhibitors for the greater part of the displays made, although there have been several new ones whose plants have been very welcome, if few in number. While this is not wholly desirable it cannot be avoided owing to the limited number of persons who have suitable plants and are willing to place them on exhibition.

As the general features of the various exhibitions are not materially different from year to year, each show will not be taken up separately, but such exhibits as seem to be of unusual interest or which are educational or instructive in their nature will receive attention.

The first exhibit to claim our attention, outside of the regular prizes, was made on Saturday, February 8, by William Thatcher, who made a display of his seedling asparagus, and which he entered in competition for the prizes offered by the Society of American Florists. It seems to be a chance seedling from *Asparagus tenuissimus*, with the same foliage, but of a very dwarf habit, making it particularly valuable for pots and jardinieres if it can be propagated with sufficient ease. This with *Nephrolepis Piersoni*, which we will describe later, were the only ones shown in competition for this prize and we recommend the award of the first prize for the *Nephrolepis* and the second for the *Asparagus*.

On March 1, James Garthley, gardener for H. H. Rogers, Esq., showed a very remarkable variegated plant, *Saxifraga sarmentosa tricolor superba*, which was brought from Scotland by him the previous autumn. It is a very beautiful variegated form of the old strawberry geranium, so-called, the leaves being beautifully marked with white and pink. While it is not an entirely new plant, it has never been shown here before and it was awarded the Society's Silver Medal.

On the same day there was shown before the Society for the first time two other plants of much merit, *Odontoglossum midgleyanum* from H. H. Hunnewell, and a hybrid *Cypripedium* raised by J. E. Rothwell, named Edmund Rothwell, a cross between *Sallierii Hyeanum* and *C. Hookerae*. The Society's Silver Medal and a First Class Certificate of Merit were awarded respectively.

The Pierson Fern.

Courtesy of the F. R. Pierson Company.

By far the most important and remarkable new plant that has been shown before the Society for many years was placed on exhibition at the March Show by the F. R. Pierson Company of Tarrytown, New York, and was shown under the name of *Nephrolepis Piersoni*. It originated with them as a sport from *N. exaltata Bostoniensis* and is very interesting botanically, as well as of great value commercially. Instead of the fronds being simply pinnate, as in the original form, the pinnæ have become divided making the frond twice pinnate. At the same time the power of indefinite extension of the tips of the fronds, a characteristic peculiar to *Nephrolepis*, seems to have been communicated to the pinnæ, thereby making the fronds of great width and beauty in a well developed plant.

There was also exhibited by L. H. Foster a similar variety of the same plant under the name of *Nephrolepis Fosteriana*. There was the same division of the pinnæ, but while this was noticeable only in the sterile fronds of Pierson's variety, it was confined to the fertile ones only in Foster's, thereby producing a much different effect and less beautiful. The Pierson variety was so remarkably distinct and at the same time of so much commercial value, that we considered the plant worthy of the highest award offered by the Society; we therefore awarded it the Gold Medal. The *N. Fosteriana* was awarded a First Class Certificate of Merit.

At this same exhibition there were several other new and interesting plants, never before shown here, and which received special awards. The most prominent among them was a specimen of the finest species of the so-called yellow callas, *Richardia Pentlandii*, shown by the Harvard Botanic Garden. It is a beautiful plant with a flower of a fine clear yellow color. A First Class Certificate of Merit was awarded for this.

The same award was made to Walter P. Winsor for *Coeloggne panduratа*. Although it is not new to cultivation, it is seldom seen, and, as we believe, was never before shown here. This orchid is one of those plants whose flowers attract more by the beautiful combination of colors displayed by them than by their great brilliancy. The individual flowers are of medium size with the sepals and petals all of a very bright green. The lip is of the same green color with a number of velvety black embossings

which produce an effect in color which is very seldom seen in flowers and is as beautiful as it is rare.

Honorable Mention was awarded to R. & J. Farquhar & Company for the new *Schizanthus wiestonensis* and to M. H. Walsh for two very pretty new seedling Rambler roses, Fairy Queen and La Fiemetta.

On April 5, Mr. E. O. Orpet, gardener to E. V. R. Thayer, was awarded the Society's Silver Gilt Medal for his seedling hybrid orchids, *Laelio-Cattleya, G. S. Ball*, the result of a cross between *Cattleya Schroederae* and *Laelia cinnabarina*. This cross was made with a view of introducing the brilliant red color of *L. cinnabarina* into the large flowers of the *Cattleya*. The eight plants exhibited illustrated the variation between individuals of identical parentage.

At the May Show, R. & J. Farquhar & Company placed on exhibition their new Rambler rose, named by them the Farquhar Rose. It is a hybrid raised by Jackson Dawson of the Arnold Arboretum, and a cross between *Rosa Wichuraiana* and the Crimson Rambler. It is remarkably free in growth, with bright, shining green leaves, resembling very much the *Wichuraiana*. The flowers are double, somewhat larger than those of the Crimson Rambler, and of a very pleasing shade of salmon-pink. Undoubtedly this is one of the most valuable of this comparatively new class of roses. We considered this well worthy of the Society's Silver Gilt Medal, and we therefore made them this award.

While speaking of this rose another new one, *Dorothy Perkins*, of the rambler class should be mentioned. It was placed on exhibition July 12 by A. T. Story, but the exhibit was too limited to judge correctly of its merits. However, it was sufficient to prove it of great promise and we awarded it Honorable Mention, believing that as the variety develops it will be one of the most valuable of this class. Its seed parent was the same as the Farquhar Rose but of the Hybrid Perpetual variety. Mme. Gabrielle Luizet was used as pollen parent. The flowers are very double, larger than Crimson Rambler, and clear shell-pink in color.

A very fine white variety of *Cattleya Mossiæ*, named *Evelyn Sloane*, was exhibited May 17 by Alfred J. Loveless, gardener to

John Sloane, Esq., of Lenox, Mass. It was a beautiful flower and was awarded the Society's Silver Medal.

Another very fine *Cattleya* which seems never to have been shown here before is *C. majalis*. It was exhibited May 31 by Edward J. Mitton and received much attention. It was awarded the Bronze Medal.

At the Rhododendron Show, June 7, there were several new plants shown which received special awards. Jason S. Bailey showed the new palm, *Kentia Duckamii*, a promising species for which he was awarded Honorable Mention.

Among orchids there were three new ones all of much beauty; one from Oakes Ames and two from J. E. Rothwell. Mr. Ames' plant was *Cypripedium callosum* var. *Sanderiae* for which he received a Silver Medal. J. E. Rothwell showed the hybrid orchid *Laelio-Cattleya* × *Phœbe* var., and *Cypripedium* × *Mars* for which he was awarded a Silver Medal and a First Class Certificate of Merit respectively.

At the Saturday exhibition, July 5, four new plants were shown, the most important from a commercial point of view, at least, being the hybrid *Richardia* raised by Joseph Tailby & Son. It is the result of a cross between *R. albo-maculata* and *Elliottiana*. The plant retains the habit of the seed parent but is of larger growth. The flower is increased in size and shows also the influence of the pollen parent in color, which is changed from white to light yellow. The foliage retains the silvery spots common to both parents, giving the plant a very brilliant effect, particularly when used for bedding out among sub-tropical plants. We consider this one of the most distinct new plants and worthy of the Society's Silver Medal, which was awarded.

The other three new plants were *Cypripediums*, all of great merit, but the one shown by J. E. Rothwell under the name of *Cypripedium* × *Cowleyanum* (*C. Curtisii* × *niveum*), was particularly interesting. This with *Cypripedium Mahleriae* var. *platytaenium* from Henry T. Clinkaberry were awarded Bronze Medals, while *Cypripedium* × *Ansonii* (*C. Morganae* × *C. Rothschildianum*), was awarded a First Class Certificate of Merit.

Another fine hybrid *Cypripedium* was shown by Mr. J. E. Rothwell on Saturday, July 12, under the name of Lord Derby (*C.*

Rothschildianum × *superbiens*), for which a First Class Certificate of Merit was awarded.

Still another new plant of unusual merit was shown by Mr. M. H. Walsh on July 26. This was a seedling hydrangea to which he has given the name *Superba*. It is the result of a cross between *H. Otaksa* and *H. cyanoclada*. The plant shown was the original one and was a mass of flowers. It seems to be exceedingly free flowering and the flowers range in color from pink to deep blue, resembling in this respect the colors seen in *H. Cyanoclada*. They are very thick and leathery in texture. This plant is particularly interesting for, so far as we can learn, it is the only instance on record where hydrangeas of this class have been raised from seed, and the fact that this was the result of hand fertilization, makes it of still greater interest. We awarded Mr. Walsh the Society's Silver Gilt Medal for this unique plant.

August 23, Mr. J. E. Rothwell brought in another new seedling orchid, *Laelio-Cattleya* × *Edmund Rothwell* (*C. Amethystoglossa* × *L. cinnabarina*), for which he received Honorable Mention. Although this showed little improvement over its parents it was interesting from the fact that it showed no trace of the bright color of the pollen parent but was much the same color as the seed parent, though lacking the spots seen in that species.

August 30, there was an interesting exhibit of American raised seedling orchids from the collection of E. V. R. Thayer, Esq., of Lancaster, Mass. It consisted of twelve plants representing nine distinct crosses, many of which had special merit. At various times during past years exhibits of individual plants and similar collections from this same source have been made, which with this display, make a record far surpassing all others in this line of work; the hybridization of the more difficult species. In recognition of this original work on the part of the gardener, Mr. E. O. Orpet, and the encouragement afforded this important work by Mr. Thayer, we have awarded the Society's Gold Medal. One plant in this exhibit was awarded a First Class Certificate of Merit, it being new to science, as well as possessing much individual beauty. It is the result of a cross between *Laelia tenebrosa* and *Cattleya Gaskelliana alba*, having been named *Laelio-Cattleya* × *Gladys*. The flower is a pleasing shade of lemon-yellow in color with a lip of lilac-rose and prettily veined.

Mr. Orpet describes the other varieties in the collection as follows:—

"*Laelio-Cattleya* × *Proserpine* (*L. Dayana* × *Cattleya velutina*), a variety with delightful perfume and brightly colored flowers, the two plants shown showing considerable variation in coloring.

Cattleya × *Atalanta* (*C. Leopoldii* × *C. gigas Sanderiana*), a handsome plant bearing a seven-flowered spike of inflorescence, each four and one-half inches across, of a beautiful light rose color, with a suffusion through the petals of a deeper shade. This handsome cross promises well for the future, producing so large a number of blossoms when first flowering.

Cattleya × *Patrocinii* (*C. Harrisonæ* × *C. Leopoldii*); this was interesting as proving the origin of a cattleya sent from Brazil as a new species, but its origin being suspected of a hybrid nature, has been proved by crossing in cultivation the two species as above that occur together in a state of nature. It is also a fine acquisition as a garden plant, the bronze of *C. Leopoldii* being suffused with the rose color of the other parent, the whole flower being four inches across, beautifully spotted, nine of them on one spike.

Cattleya × *interglossa* (*C. intermedia* × *C. amethystoglossa*). A plant was shown carrying two five-flowered spikes of lilac-pink flowers with the spotting of *C. intermedia* on the petals and sepals, and the rich amethyst lip of the other parent. It is a useful variety for producing cut flowers, owing to its free flowering properties and vigor.

Laelio-Cattleya × *C. G. Roebling* (*Cattleya Gaskelliana* × *Laelia purpurata*), a stately and handsomely colored hybrid with flowers eight inches in diameter, sweetly scented, combining the fine features of the two parents to a marked degree.

Laelia × *nigrescens* (*L. pumila* × *L. tenebrosa*); this cross was again shown in two distinct forms from that originally exhibited, a characteristic of this combination of parents being a wide variation.

Laelio-Cattleya × *Bletchleyensis* (*Laelia tenebrosa* × *Cattleya gigas Sanderiana*). This plant showed plainly the value of using as parents in crossing the best obtainable forms of species as subjects to work with, the influence of this distinct type of *C.*

gigas being plainly discernible in the finely developed lip and its rich coloring of deep bronze-crimson, and the lighter shade of the same color in sepals and petals.

Laelia × *Amœna* (*L. Dayana* × *L. anceps Stella*). Two plants were included in the exhibit, of widely different coloring, one being remarkable for its deep purple-crimson through the whole flower, while in the other form this rich coloring was present only in the lip, making a pleasing contrast to the lighter rose sepals. It is a plant that shows the *L. anceps* plainly in the growth, but the flower stem is reduced from that of the length of *L. anceps* to a height of about twelve inches, while *Laelia Dayana* leaves its impress plainly in the rich coloring of the lip which also has the raised deep purple lines of *L. Dayana.*"

At the Annual Exhibition September 11, several new plants were shown, four of them orchids. The most interesting of these being a hybrid zygopetalum, *Z. Roblingianum* (*Z. costratum* × *Z. Gauthierii*), from Henry T. Clinkaberry of Trenton, N. J., who entered this in competition for the best American seedling orchid other than cypripedium. This won the highest prize awarded, a Silver Medal.

The others, all of which were awarded Honorable Mention, were *Laelia grandis tenebrosa*, *Summitosa*, from Lager & Hurrell of Summit, N. J. *Cypripedium Fairy Queen* and *Laelio-Cattleya C. H. Holmes*; *Lelia purpurata* × *Cattleya Schilleriana*, from J. E. Rothwell. Lager & Hurrell also received a First Class Certificate of Merit for a deep colored variety of *Cattleya Hardyana.*

Honorable Mention was also awarded to Jason S. Bailey for a new variety of *Alocasia Wavriniana*, to W. A. Manda, for a new rose, a hybrid between American Beauty and Jersey Beauty, and to D. F. Roy for a seedling canna, *Mrs. E. S. Converse.*

W. A Manda was awarded a Silver Medal for a fine new form of the California privet, *Ligustrum ovalifolium.* It is beautifully variegated with golden yellow and seems to be well fixed. It should make a valuable addition to the shrubs with golden foliage.

Dracœna lantuginosa was shown by Col. Charles Pfaff and awarded a First Class Certificate Merit. It is a fine plant in the way of *D. indivisa.*

New Seedling Hydrangea "Superba": M. H. Walsh.

A. F. Estabrook showed a small but well grown plant of the new fern, *Adiantum Charlottæ* for which a First Class Certificate of Merit was awarded. This is one of the most beautiful of the many forms of *A. cuneatum*, much like the variety *gracilimum*, but much stronger and better in habit.

October 4, the Blue Hill Nurseries sent in a new hardy grass, *Arrhenatherum bulbosum variegatum* for which a First Class Certificate of Merit was awarded. It is a very pretty, dwarf grass which should be useful for edgings.

J. E. Rothwell showed a new seedling orchid, *Laelia* × *Oweniana* (*L. Dayana* × *L. xanthina*), for which he received Honorable Mention. He also showed the rare *Cypripedium Sanderianum*, the only true cypripedium with long string-like petals. This is a most difficult subject, but its possibilities for hybridizing purposes are many, and some fine novelties are looked for from this source. We deemed this plant worthy of being awarded the Silver Medal.

There were brought to the Chrysanthemum Show two new orchids, one in competition for the best American raised, seedling orchid. It was *Cattleya* × *Rothwelliæ* (*C. Bowringiana* × *C. Eldorado*) by J. E. Rothwell; this won the third prize, a Bronze Medal. The other was *Cattleya* × *mollis*, shown by James Wheeler. The plant was one of a lot of seedlings raised by E. O. Orpet from *Cattleya Gaskellina* × *C. superba splendens*. It is a beautiful variety and was awarded the Society's Silver Medal.

At various times during the year plants have been exhibited which have shown unusual skill in their cultivation and, although exhibited under the name of the owners, we considered the cultural excellence due to the gardeners who grew them, and have recognized their skill by making cultural awards to them.

The first to be recognized in this way was a plant of *Oncidium Cavendishianum*, on March 8, from Col. Charles Pfaff, and grown by George Melvin, his gardener. The plant was remarkably well grown and showed unusual skill in handling this subject. He was awarded a First Class Certificate of Merit for superior cultivation. He also received the same award for a well-grown plant of *Odontoglossum læve* on July 5.

The most remarkable plant that has come under our notice from a cultural point of view was a magnificent basket of *Dendrobium nobile* exhibited by Mrs. John C. Whitin at the Spring Show on March 19. The plant was entered in competition for specimen plant of orchid and won the first prize, but in addition to this we considered it to be so well grown that much honor is due to William McAllister, the gardener, and we therefore awarded him the Society's Silver Medal for superior cultivation, The plant was conceded to be the finest specimen of the kind ever shown before the Society.

Other awards of this nature were, First Class Certificate of Merit awarded to James Garthley, gardener to H. H. Rogers, on April 5, for *Cypripedium villosum*. On May 3, to J. Lawson, gardener to Edward J. Mitton, for a fine plant of *Brassia verrucosa*, carrying fourteen spikes of bloom. To D. F. Roy, gardener to E. S. Converse, on June 19, for a remarkable plant of *Pteris ensiformis* var., *Victoriæ*, showing well how handsome a plant this fern is capable of making under favorable conditions and proper treatment; and to Emil Johansson for a very finely grown *Cypripedium* × *Frau Ida Brandt* var., exhibited on July 5.

At the Rhododendron Show, June 7, Jason S. Bailey made a fine display of calceolaria, Golden Gem, which attracted much attention. We make mention of this, for the shrubby varieties seem to have been overlooked, as exhibition plants, previous to this. That this should not be so seems very evident from the great beauty of the plants shown by Mr. Bailey.

Some unusual features were introduced at the Annual Exhibition, September 11, one of which was the magnificent display of crotons from E. J. Mitton of Brookline, comprising over fifty varieties, many of which were new. The display occupied a prominent place on the main floor and was greatly admired. It was the most extensive display of these plants ever attempted here, and in consideration of this and the fine condition of the plants we awarded Mr. Mitton the Society's Silver Gilt Medal.

Another feature was the display of Miniature Gardens and Dwarfed Japanese Trees from the Yamanaka Company. The dwarfing process practised by the Japanese gardeners was illustrated by the series of trees ranging from the little, one year old

specimen, to comparatively immense trees of great age. This exhibit formed a striking contrast to the other displays, for on the one hand we had the oriental idea of perfection in the gardener's art and on the other the occidental.

The Chrysanthemum Show brought out some remarkable plants, fully equal to any previously shown. The acme of perfection in trained chrysanthemums seems to have been reached, and we can hope for nothing finer in this style of plants than those exhibited by Jason S. Bailey and Mrs. B. P. Cheney.

We would suggest, however, that as the chrysanthemum lends itself so naturally to decorative effects, that more attention be paid to methods of cultivation which will emphasize this to the best advantage, feeling that the public will be most appreciative of any departure in this direction. We would not encourage this method of culture to the exclusion of the present system, for there is ample room for both, and the skill of the gardener will be taxed to as great an extent to produce the artistically beautiful as it now is to produce the symmetrically beautiful.

Late in November, Mr. Peter Fisher entered with this committee his seedling carnation, *Mrs. Thomas W. Lawson*, in competition for the prospective prize offered by the Society for the best seedling flowering plant. This variety has been under observation for several years and is thoroughly known to us. We can therefore unhesitatingly recommend this plant for the prize as we consider it the most distinct break in carnations that has come to our notice.

PRIZES AND GRATUITIES AWARDED FOR PLANTS.

1902.

JANUARY 4.

PRIMULA SINENSIS.—Six plants in not less than six-inch pots:
1st, Mrs. J. L. Gardner, $4; 2d, Mrs. B. P. Cheney, $3; 3d, Mrs. B. P. Cheney, $2.

PRIMULA STELLATA.—Six plants in not less than six-inch pots:
1st, C. H. Souther, $3; 2d, Mrs. B. P. Cheney, $2.

PRIMULA OBCONICA HYBRIDS.—Six plants in not less than six-inch pots:
1st, Mrs. B. P. Cheney, $4; 2d, Mrs. B. P. Cheney, $3; 3d, Mrs. J. L. Gardner, $2.

FEBRUARY 8.

FREESIAS.—Six pots or pans:
1st, Col. C. Pfaff, $5.

Gratuities:—

Mrs. J. L. Gardner, *Primula Sinensis alba plena*, $2.
Mrs. B. P. Cheney, Thirteen plants of *Primula obconica*, $6.

SPRING EXHIBITION.

MARCH 19, 20, 21, 22 AND 23.

Theodore Lyman Fund.

INDIAN AZALEAS.—Specimen plant, named:
1st, Dr. C. G. Weld, $8.

BEGONIA GLOIRE DE LORRAINE.—Display:
1st, Mrs. B. P. Cheney, $15.

Society's Prizes.

ERICAS.—Six, not less than three species:
1st, Dr. C. G. Weld, $6.

ORCHID.—Single Plant:
1st, Mrs. J. C. Whitin, *Dendrobium nobile*, $12; 2d, W. P. Winsor, *Dendrobium nobile*, $10; 3d, Mrs. J. L. Gardner, *Phajus grandiflorus*, $6.

STOVE OR GREENHOUSE PLANTS.—Specimen, in bloom, other than Azalea or Orchid:
1st, Mrs. J. L. Gardner, *Acacia heterophylla*, $6; 2d, Dr. C. G. Weld, *Erica melanthera*, $4.

HARD-WOODED GREENHOUSE PLANTS.—Four, in bloom:
1st, Dr. C. G. Weld, $10.

HARDY FLOWERING DECIDUOUS SHRUBS, FORCED.—Four, of four distinct species, named:
1st, Bussey Institution, $8; 2d, Mrs. J. L. Gardner, $5.

HARDY PRIMROSES.—Twelve plants of distinct varieties:
1st, Dr. C. G. Weld, $6; 2d, Mrs. J. L. Gardner, $4; 3d, Mrs. J. L. Gardner, $2.

HARDY POLYANTHUSES.—Twelve plants of distinct varieties:
1st, Mrs. J. L. Gardner, $6.

CYCLAMENS.—Ten plants:
1st, Mrs. B. P. Cheney, $15; 2d, C. H. Souther, $12; 3d, Mrs. B. P. Cheney, $10.

Ten plants, in not over seven-inch pots:
1st, G. F. Fabvan, $8; 2d, Mrs. B. P. Cheney, $6; 3d, G. F. Fabyan, $4.

Single plant:
1st, C. H. Souther, $5; 2d, Mrs. B. P. Cheney, $4.

CINERARIAS.—Six varieties:
1st, E. J. Mitton, $10; 2d, Mrs. B. P. Cheney, $8; 3d, Mrs. J. L. Gardner, $6; 4th, Dr. C. G. Weld, $5.

Three varieties:
1st, Mrs B. P. Cheney, $6; 2d, Mrs. B. P. Cheney, $5; 3d, Mrs. J. L. Gardner, $4.

Single plant:
1st, Mrs. J. L. Gardner, $3; 2d, E. J. Mitton, $2; 3d, Mrs. B. P. Cheney, $1.

HYACINTHS.—Twelve named varieties, in pots; one in each pot:
1st, Dr. C. G. Weld, $8; 2d, Bussey Institution, $5; 3d, E. S. Converse, $3.

Six named varieties:
1st, E. S. Converse, $5; 2d, Bussey Institution, $4; 3d, Mrs. J. L. Gardner, $3.

Single named bulb:
1st, Bussey Institution, $2; 2d, Mrs. J. L. Gardner, $1.

Three pans, not to exceed twelve inches, ten bulbs of one variety in each:
1st, Dr. C. G. Weld, $6; 2d, Mrs. J. L. Gardner, $4.

Two pans, not to exceed twelve inches, ten bulbs of one variety in each:
1st, Mrs. J. L. Gardner, $4; 2d, Mrs. J. L. Gardner, $3; 3d, Dr. C. G. Weld, $2.

Single pan, not to exceed twelve inches, with ten bulbs of one variety:
1st, Mrs. J. L. Gardner, $3; 2d, Bussey Institution, $2; 3d, Mrs J L. Gardner, $1.

TULIPS.—Six eight-inch pans, nine bulbs of one variety in each:
1st, W. S. Ewell & Son, $6; 2d, W. S. Ewell & Son, $4; 3d, Bussey Institution, $2.

Three eight-inch pans, nine bulbs of one variety in each:
1st, E. S. Converse, $3; 2d, W. S. Ewell & Son, $2; 3d, Bussey Institution, $1.

Three ten-inch pans, twelve bulbs of one variety in each:
1st, Dr. C. G. Weld, $5; 2d, E. S. Converse, $4; 3d, W. S. Ewell & Son, $3; 4th, W. S. Ewell & Son, $2.

POLYANTHUS NARCISSUS.—Four seven-inch pots, four bulbs in each, distinct varieties:
1st, Dr. C. G. Weld, $4.

JONQUILS.—Six pots or pans, not exceeding eight inches, the number of bulbs in each to be at the discretion of the grower:
1st, Dr. C. G. Weld, $4; 2d, W. S. Ewell & Son, $3; 3d, W. S. Ewell & Son, $2.

NARCISSUSES.—Six eight-inch pans, distinct varieties, single or double:
1st, Dr. C. G. Weld, $6; 2d, W. S. Ewell & Son, $4.

Three eight-inch pans:
1st, W. S. Ewell & Son, $3; 2d, Dr. C. G. Weld, $2.

LILY OF THE VALLEY.—Six pots or pans, not exceeding eight inches:
1st, Bussey Institution, $4; 2d, W. S. Ewell & Son, $3; 3d, P. B Bradley, $2.

CROCUSES.—Three boxes, each eight by twenty inches, three distinct varieties:
1st, Bussey Institution, $3; 2d, W. S. Ewell & Son, $2; 3d, Bussey Institution, $1.

IXIAS.—Six pots or pans, in varieties:
1st, Dr. C. G. Weld, $5.

TRITONIAS.—Six pots or pans, in varieties:
1st, Dr. C. G. Weld, $5.

ROMAN HYACINTHS.—Six eight-inch pans, ten bulbs in a pan:
1st, Dr. C. G. Weld, $4; 2d, W. S. Ewell & Son, $2; 3d, Bussey Institution, $1.

GENERAL DISPLAY OF SPRING BULBS AND PLANTS:—All classes:
1st, Bussey Institution, $30; 2d, W. S. Ewell & Son, $20.

Gratuities:—

N. F. Comley, Azalea, $1.

E. E Riley, Hybrid Primulas, $2.

R. & J. Farquhar & Co., Display of Bays, Palms, and Cyclamen, $35.

Harvard Botanic Garden, Display of Cyclamen, *Primula obconica*, *Cœlogyne*, and *Lachenalias*, $25.

J. S. Bailey, Display of Palms, Cinerarias, Cyclamens, etc., $25.

Bussey Institution, Forced Hardy Herbaceous Plants and Shrubs, $10.

MAY 10.

CALCEOLARIAS.—Six varieties, in pots:
1st, Mrs. B. P. Cheney, $10; 2d, G. F. Fabyan, $8; 3d, Mrs. B. P. Cheney, $6.
Single plant:
1st, Mrs. B. P. Cheney, $3; 2d, G. F. Fabyan, $2.

Gratuities:—

J. E. Rothwell, Display of Orchids, $12.
J. E. Little, *Phyllocactus speciosa rosea*, $1.

RHODODENDRON EXHIBITION.

JUNE 7 (*Changed from June 6, 7 and 8*)

ORCHIDS.—Display, arranged for effect, with foliage plants, in a space eight feet by five feet:
1st, J. S. Bailey, $30; 2d, J. E. Rothwell, $25.

Gratuities:—

E. J. Mitton, Display of Pelargoniums, $10.
J. S. Bailey, Display of Shrubby Calceolaria Golden Gem, $5.
J. L. Little, *Campanula Medium calycanthema*, $2.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 19 AND 20 (*Changed from June 24 and 25*).

DECORATIVE PLANTS.—Group, named, arranged for effect, covering one hundred and fifty square feet:
1st, Mrs. J. L. Gardner, $30; 2d, E. S. Converse, $25.
GLOXINIAS.—Six plants in not less than eight-inch pots:
1st, J. L. Little, $10; 2d, Mrs. J. L. Gardner, $6; 3d, Mrs. J. L. Gardner, $3.
ORCHIDS.—Six plants, of six named varieties, in bloom:
1st, J. E. Rothwell, $15.
Three plants, of three named varieties, in bloom:
1st, E. J Mitton, $10; 2d, J. E. Rothwell, $8.
Single specimen, named, in bloom:
1st, H. A. Wheeler, $5; 2d, J. E. Rothwell, $3.

Gratuities:—

E. S. Converse, Tuberous Begonias, $8.
A. F. Estabrook, Display, $5.

JULY 5.

Gratuity:—

E. J. Mitton, *Oncidium incurvum* and *Cattleya Gaskelliana*, $2.

AUGUST 9.

Gratuity:—

E. J. Mitton, *Cattleya Dowiana chrysotoxa* and *C. Gaskelliana*, $2.

AUGUST 16.

Gratuities:—

J. E. Rothwell, Collection of Cypripediums, $8.
E. J. Mitton, *Oncidium papilio*, $1.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 11, 12, 13 AND 14.

PALMS.—Pair, in pots or tubs not less than eighteen inches in diameter:
1st, J. S. Bailey, $12; 2d, Mrs. J. L. Gardner, $8.
Pair, in pots or tubs not more than fourteen inches in diameter:
1st, J. S. Bailey, $8; 2d, A. F. Estabrook, $6.

GREENHOUSE PLANTS.—Best finished group containing foliage plants of all descriptions, arranged for effect, covering two hundred square feet:
1st, J. S. Bailey, $50; 2d, Mrs. J. L. Gardner, $35; 3d, E. S. Converse, $25.

Six Greenhouse and Stove plants, decorative specimens of different named varieties, two crotons admissible:
1st, J. S. Bailey, $25; 2d, Mrs. J. L. Gardner, $20; 3d, E. S. Converse, $15.

CENTRE PIECE FOR TABLE.—For fifteen covers, living plants, in one receptacle:
1st, J. E. Rothwell, $10; 2d, E. J. Mitton, $8.

FERNS.—Five named varieties, no Adiantums admissible:
1st, E. S. Converse, $10; 2d, A. F. Estabrook, $6.
Specimen, other than Tree Fern:
1st, J. S. Bailey, $4; 2d, A. F. Estabrook, $3.

ADIANTUMS.—Five named varieties:
2d, A. F. Estabrook, $5.

DRACÆNAS.—Six named varieties:
1st, J. S Bailey, $8; 2d, Mrs. J. L. Gardner, $5.

CROTONS.—Twenty-five plants, not less than eighteen named varieties, in not less than six-inch pots:
1st, J. S. Bailey, $12; 2d, Mrs. J. L. Gardner, $8.

BEGONIA REX.—Ten pots of ten named varieties:
1st, E. S. Converse, $10; 2d, E. J. Mitton, $8; 3d, Mrs. J. L. Gardner, $6.

OUVIRANDRA FENESTRALIS.—1st, Mrs. J. L. Gardner, $6; 2d, E. S. Converse, $4.

Gratuities:—

J. E. Rothwell, Collection of Orchids, $10.
Lager & Hurrell, " " " $8.
E. J. Mitton, " " " $2.
C. H. Souther, Display of Platyceriums, $4.
Dr. A. H. Flower, *Nephrolepis exaltata*, $2.
R. & J. Farquhar & Co., Display of Foliage Plants, $20.
W. H. Lincoln, Group of Foliage Plants, $12.
Mrs. J. L. Gardner, Display of Flowering Plants, $5.
A. F. Estabrook, Bambusa, $2.
Yamanaka & Co., Display of Miniature Gardens and Dwarf Japanese Trees, $30.

CHRYSANTHEMUM SHOW.

NOVEMBER 6, 7, 8 AND 9.

CHRYSANTHEMUMS.—Display of eight named plants, any or all classes, named varieties:
1st, J. S. Bailey, $60; 2d, Mrs. B. P. Cheney, $45; 3d, E. S. Converse, $35.

Display of ten named plants, any or all classes, distinct varieties, in not exceeding nine-inch pots of ordinary form.
1st, W. Hunnewell, $35; 2d, E. S. Converse, $25.

Three Japanese Incurved:
1st, Mrs. B. P. Cheney, $12.

Three Reflexed; distinct named varieties:
1st, Mrs. B. P. Cheney, $12; 2d, E. S. Converse, $10.

Specimen Japanese Incurved; named variety:
1st, J. S. Bailey, $6; 2d, E. W. Converse, $5; 3d, J. S. Bailey, $4.

Specimen Reflexed, named variety:
1st, Mrs. B. P. Cheney, $6; 2d, E. S. Converse, $5; 3d, W. Hunnewell, $4.

Specimen Anemone Flowered, named variety:
1st, J. S. Bailey, $6; 2d, H. H. Rogers, $5; 3d, E. S. Converse, $4.

Specimen Pompon, named variety:
1st, E. S. Converse, $4.

Twelve plants, of twelve different varieties, grown to one stem and bloom, in not over six-inch pots, preference being given to plants not more than three feet in height:
1st, E. A. Clark, $8; 2d, E. S. Converse, $6.

Six plants grown as above, but all of one color, Red:
1st, E. A. Clark, $4; 2d, E. A. Clark, $3; 3d, E. S. Converse, $2.
White:
1st, E. A. Clark, $4; 2d, E. S. Converse, $3.
Pink:
1st, E. A. Clark, $4; 2d, E. S. Converse, $3.
Yellow:
1st, E. A. Clark. $4; 2d, E. A. Clark, $3; 3d, E. S. Converse, $2.
Any other color:
1st, E. A. Clark, $4; 2d, E. S. Converse, $3.
Group of Chrysanthemums, arranged for effect, with palms and decorative foliaged plants, limited to one hundred square feet:
1st, Mrs. J. L. Gardner, $25.

Gratuities:—

E. S. Converse, Standard Chrysanthemums, twelve plants, $18.
W. Hunnewell, Display of Chrysanthemums, $6.
E. W. Converse, Chrysanthemum Pink Ivory, $2.
L. H. Foster, Display of *Nephrolepis Anna Foster*, $5.
F. R. Pierson & Co., *Nephrolepis Piersoni*, $5.
W. Hunnewell, *Salvia leucantha*, $3.
Mrs. J. L. Gardner, Seedling Asparagus, $3.
Lager & Hurrell, Display of Orchids, $20.
W. Hunnewell, Display of *Oncidium ornithorhynchum*, $5.
R. & J. Farquhar & Co., Display of Palms, Bay Trees, Araucarias, etc., $30.

SOCIETY'S GOLD MEDALS.

Spring Exhibition, March 19–23. F. R. Pierson & Co., for *Nephrolepis Piersoni*.
August 30. E. V. R. Thayer, for American Raised Seedling Orchids.

SOCIETY'S SILVER GILT MEDALS.

April 5. E. O. Orpet, for *Lælio-Cattleya*, G. S. Ball.
May 10. R. & J. Farquhar & Co., for The Farquhar Rose.
July 26. M. H. Walsh, for Seedling *Hydrangea superba*.
Annual Exhibition of Plants and Flowers, September 11–14. E. J. Mitton, for Display of Crotons.

SOCIETY'S SILVER MEDALS.

March 1. H. H. Rogers, for *Saxifraga sarmentosa tricolor superba*.
" " H. H. Hunnewell, for *Odontoglossum Midgleyanum*.
Spring Exhibition, March 19–23. W. McAllister, for Superior cultivation of *Dendrobium nobile*.

May 17. A. J. Loveless, for *Cattleya Mossiæ* var. *Evelyn Sloane*.

Rhododendron Exhibition, June 7. O. Ames, for *Cypripedium callosum* var. *Sanderæ*.

" " " " J. E. Rothwell, for *Lælio-Cattleya* × *Phœbe* var.

July 5. J. Tailby & Son, for Seedling *Richardia*.

Annual Exhibition of Plants and Flowers, September 11–14. W. A. Manda, for Golden variegated Privet.

Annual Exhibition of Plants and Flowers, September 11–14. H. T. Clinkaberry, for *Zygopetalum* × *Roblingianum*.

October Exhibition of Fruits and Vegetables, October 3 and 4. J. E. Rothwell, for *Cypripedium Sanderianum*.

Chrysanthemum Show, November 6–9. J. Wheeler, for *Cattleya mollis*.

SOCIETY'S BRONZE MEDALS.

May 31. E. J. Mitton, for *Lælia majalis*.

July 5. J. E. Rothwell, for *Cypripedium Cowleyanum*.

" " H. T. Clinkaberry, for *Cypripedium Mahleræ*.

Chrysanthemum Show, November 6–9. J E. Rothwell, for *Cattleya Rothwelliæ*.

FIRST CLASS CERTIFICATES OF MERIT.

March 1. J. E. Rothwell, for *Cypripedium Edmund Rothwell*.

" 8. G. Melvin, for Superior cultivation of *Oncidium Cavendishianum*.

Spring Exhibition, March 19–23. L. H. Foster, for *Nephrolepis Fosteriana*.

" " " " Harvard Botanic Garden, for *Richardia Pentlandii*.

" " " " W. P. Winsor, for *Cœlogyne pandurata*.

April 5. J. Garthley, for Superior cultivation of *Cypripedium villosum*.

May 3. J. Lawson, for Superior cultivation of *Brassia verrucosa*.

Rhododendron Exhibition, June 7. J. E. Rothwell, for *Cypripedium Mars*.

Rose and Strawberry Exhibition, June 19 and 20. D. F. Roy, for Superior cultivation of *Pteris ensiformis* var. *Victoriæ*.

July 5. E. Johansson, for Superior cultivation of *Cypripedium* × *Frau Ida Brandt* var.

" " O. Ames, for *Cypripedium l'Ansoni*.

" " G. Melvin, for Superior cultivation of *Odontoglossum lævе*.

" 12. J. E. Rothwell, for *Cypripedium* × *Lord Derby*.

August 30. E. O. Orpet, for *Lælio-Cattleya Gladys*.

Annual Exhibition of Plants and Flowers, September 11-14.

Col. C. Pfaff, for *Dracæna lantuginosa*.

Lager & Hurrell, for *Cattleya Hardyana*, deep colored variety.

A. F. Estabrook, for *Adiantum Charlottæ*.

October Exhibition of Fruits and Vegetables, October 3 and 4. Blue Hill Nurseries, for *Arrhenatherum bulbosum variegatum*.

HONORABLE MENTION.

Spring Exhibition, March 19–23.

R. & J. Farquhar & Co., for *Schizanthus Wiestoniensis.*

M. H. Walsh, for Seedling Rambler Rose Fairy Queen.

M. H. Walsh, for Seedling Rambler Rose *La Fiemetta.*

Rhododendron Exhibition, June 7. J. S. Bailey, for *Kentia Duckhamii.*

July 12. A. T. Story, for Rambler Rose Dorothy Perkins.

August 23. J. E. Rothwell, for *Lælio-Cattleya* × *Edmund Rothwell.*

Annual Exhibition of Plants and Flowers, September 11-14.

Lager & Hurrell, for *Lælia grandis tenebrosa Summitosa.*

J. E. Rothwell, *Cypripedium Fairy Queen.*

J. S. Bailey, *Alocasia Warriniana.*

W. A Manda, New Hybrid Rose.

J. E. Rothwell, *Lælio-Cattleya* C. H. Holmes.

D. F. Roy, Seedling Canna, Mrs. E. S. Converse.

October Exhibition of Fruits and Vegetables, October 3 and 4. J. E. Rothwell, for *Lælia* × *Oweniana.*

Amount appropriated for prizes and gratuities for 1901		$2,000 00
Amount awarded for prizes and gratuities .	$1,659 00	
Estimate cost of medals awarded . . .	270 00	1,929 00
Leaving an unexpended balance of . . .		$71 00

ARTHUR H. FEWKES,
JAMES WHEELER,
WILLIAM J. MARTIN,
ROBERT CAMERON,
ROBERT MELROSE GREY,
} *Committee on Plants.*

Frond of the Pierson Fern.

Courtesy of the F. R. Pierson Company.

REPORT

OF THE

COMMITTEE ON FLOWERS

FOR THE YEAR 1902.

By J. WOODWARD MANNING, CHAIRMAN.

Your committee would report that the exhibits of the present year have been of a high standard and indicative of that renewal and increase in interest that was hoped for when the project of a new exhibition hall was undertaken. The quality of the exhibits has been good, the method of exhibition has neither improved nor deteriorated, the objectionable features of an unsatisfactory color scheme of walls has been a continued drawback to showing exhibits to the best advantage, but we hope that there may be a means to remove this objection in the near future.

The distance of the hall from the business section of the city has prevented a continuous and satisfactory attendance of a majority of the committee at the various meetings, and has caused changes by resignation and otherwise of members of this body. This is a matter which will regulate itself in time, but which has caused, during the present year, an unequal burden of work on the few members who were able to attend.

Death has removed from the membership of the Flower Committee Mr. James Comley, who has served many years on this and other committees, and who, by his constant attendance up to within a few weeks of his death, has been a most valued and conscientious member. His exhibits had been of such unusual extent and of such high character that the loss of the same to the Society

has been very noticeable, but aside from this the committee has met a severe loss by his death in losing the value of his wide knowledge and experience as a judge.

The attendance at the exhibitions has been largely augmented and commences to prove the wisdom of a change of location of the hall; the character of the attendance is changed somewhat, as would be expected, but while we miss some faces of flower-lovers that we have cause to regret, there is, on the other hand, nothing to regret in the personnel of our present visitors.

To review the exhibits in a general way, special mention should be made of the following:—

The exhibitions of Orchids on February 8 and at later dates have proved most attractive, and included many rare and interesting forms. Probably no class of exhibits attract greater interest, though the general knowledge of the plants is less extended than among other classes. The coterie of orchid experts in this vicinity is such as to insure a good exhibition whenever a fair prize is offered, and many unique and noteworthy forms are shown at times in variety and quantity probably unequaled in the United States.

Your committee is in favor of extended inducement in drawing out added competition in this class.

At the exhibition of February 8, Mrs. John L. Gardner gained first and Col. Charles Pfaff second prizes for two notable exhibits, and other notable collections were shown during the year.

The Spring Exhibition had many fine entries in Roses, Carnations, and Violets, of which the carnations showed the greatest advancement in the quality of the flowers, both from the standpoint of distinction in varieties and in the skill shown in culture. The advantage of showing carnations for a less period of the Spring Exhibition than formerly was made apparent by the increased freshness of the exhibition, under the new exhibition rules. Mr. M. H. Walsh of Wood's Hole was awarded Honorable Mention for a new seedling Rambler rose named "Miss Simplicity."

The Peony contests in June were spirited, and brought out a fine exhibit both in quality and variety. The Kelway Silver Gilt Medal for a collection of eighteen named varieties was awarded

to Arthur H. Fewkes, and the second prize of the Kelway Bronze Medal was gained by George Hollis. Other notable exhibits of peonies were shown, among which could be mentioned those of T. C. Thurlow, Joseph H. White, Mrs. John L. Gardner, Mrs. E. M. Gill, and A. F. Estabrook as competitors. George Hollis was awarded a First Class Certificate for peony "Maud L. Richardson," and Honorable Mention for peony "Goliath," and entered the latter for the Prospective Prize.

The Rhododendron Show, though suffering a loss of two prominent exhibitors of former years, still proved one of the noteworthy exhibits of the year, and while competition among the classes was less than previously, yet the general displays were well staged and abundant. During this exhibition was shown a notable collection of German iris by Frederick J. Rea, to whom a First Class Certificate was awarded for same.

The Rose and Strawberry Exhibition of June 19 and 20 recalled something of the successful exhibits of former years; a pleasant relief after two unfavorable years for Rose shows. The competition was close, and in many respects the character and variety of the exhibition have not been exceeded in former years. New competitors have entered the field, showing a healthy interest and future for Rose exhibitions to come. Other notable exhibits of this show were that of a new hardy herbaceous perennial *Campanula Persicifolia*, var. *Moerheimii*, a fine white, very double variety of the peach-leaved harebell, shown by Frederick J. Rea, and a large vase each of superbly grown foxgloves and delphiniums, shown by Mrs. John L. Gardner.

Never have Japanese irises been shown to greater advantage than at the exhibition of July 5. The high culture, great variety, and quality of the flowers showed what this class is capable of as a decorative, hardy plant. Hardy herbaceous perennials were exhibited from this date through the balance of the season, and while the restrictions limited the number of bottles in a display, the quality and variety shown were satisfactory in every way.

Special prizes were awarded at this exhibition for noteworthy exhibits in Honorable Mentions to Frederick J. Rea for the new Hybrid Wichuraiana rose "Dorothy Perkins," and to H. A. Wheeler for the Shasta daisy, and a First Class Certificate to

Arthur H. Brigham, of Weston, for a display of a fine white variety of *Cypripedium spectabile*.

From July 19 to the end of the season, hardy perennial phloxes were notable for the size and quality of the exhibits, the perfection of truss and habit, and the size and color of the individual flowers. It is a class that forms as valuable an adjunct to the hardy flower-border as the peony, and at a season which enables each to be appreciated without rivalry.

Dahlias were first exhibited on July 19, and from that time to the Chrysanthemum Show enlivened the hall with their wealth of color and form. Previous reports have indicated the trend of popularity to this flower, and this season's exhibitions have reiterated the popularity and decorative value of the class. A notable break in type was shown in an exhibit by R. & J. Farquhar & Company, known as the "collerette class," in the example of the variety, President Viger, for which a First Class Certificate was awarded. The Dahlia Show of the Annual Exhibition was finely staged by a goodly number of exhibitors, and was a success in every way.

Gladioli has been another class in which continued improvement in variety and form of flowers has been apparent, and the collection of F. A. Blake of the Gandevensis type of hybrids has been good, while that of Arthur Cowee, of Berlin, New York, has contained many fine forms of both the Gandevensis and Lemoinei type of hybrids. Mr. Cowee's collection was awarded two Honorable Mentions.

Aquatics, though not shown in the great variety of families that have appeared in exhibitions of former years, have been well represented, by the *Nymphæas* of which Henry A. Dreer, of Philadelphia, exhibited a notable collection on September 12, among which a First Class Certificate was awarded to the variety "Mrs. C. M. Ward," and Honorable Mention was made to the same party for the variety "Philadelphia."

Chrysanthemums were never shown in greater variety and in better quality than in 1902. The halls were all well filled, the competition was close, and the high standard of former years was fully maintained. The public interest in the exhibition was good, and the culminating flower show of the year gave promise in

quality, competition, and public interest to encourage continued effort to make the exhibits of the Massachusetts Horticultural Society a standard for the country.

Some notable exhibits of new carnations and roses were shown at the Chrysanthemum Show, for which Peter Fisher of Ellis was awarded a Silver Medal for carnation "Enchantress"; A. Roper, a Silver Medal for carnation "Fair Maid"; a Silver Medal to E. G. Asmus, of West Hoboken, N. J., for the new yellow rose, "F. Deegen," the so-called "Twentieth Century" rose; and an Honorable Mention to the H. Dale Estate of Brampton, Canada, for the rose "Canadian Queen." A First Class Certificate was also awarded to Walter Hunnewell for a new unnamed sport from the Oriental Glory chrysanthemum.

Your committee was granted an appropriation of $2,500 for the year 1902. They have awarded in cash prizes $1,798, leaving a balance of $702, out of which must be deducted the cost of the additional awards of four Silver Gilt Medals, seven Silver Medals, one Bronze Medal, six First Class Certificates, and eleven Honorable Mentions.

The following awards have been made during the year:—

PRIZES AND GRATUITIES AWARDED FOR FLOWERS.

1902.

JANUARY 4.

FREESIAS.—Vase of fifty spikes:

1st, Mrs. E. M. Gill, $2.

General Display.—Arranged for effect, in space of twelve or more square feet:

1st, Mrs. E. M. Gill, $2.

PRIMULA SINENSIS.—Display of fifty or more individual blooms:

1st, Mrs. E. M. Gill, $2; 2d, Mrs. J. L. Gardner, $1.

FEBRUARY 8.

CARNATIONS.—Display of cut blooms, with foliage, not less than six varieties in vases:

1st, M. A. Patten, $8; 2d, M. A. Patten, $6.

CAMELLIAS.—Display of named varieties, cut flowers with foliage, not less than twelve blooms, in not less than six varieties:
1st, Mrs. J. L. Gardner, $4.

Gratuities:—

A. Roper, Vase of Carnations, Fair Maid, $3.
Miss H. B. Winter, Carnations, $1.
Mrs. E. M. Gill, Cut Flowers, $2.

MARCH 1.

General Display.—Arranged for effect, in space of thirty or more square feet:
2d, Miss H. B. Winter, $4.
General Display.—Arranged for effect, in space of twelve or more square feet:
2d, Miss H. B. Winter, $1.

Gratuity:—

Mrs. E. M. Gill, Cut Flowers, $1.

SPRING EXHIBITION.

MARCH 19, 20, 21, 22 AND 23.

HYBRID PERPETUAL ROSES.—Twelve blooms, in not less than four named varieties:
1st, Col. C. Pfaff, $10.
Six blooms, not less than three named varieties:
1st, Col. C. Pfaff, $5.
Twelve blooms of Ulrich Brunner:
1st, Col. C. Pfaff, $10.
TENDER ROSES, IN VASES.—Twenty-five blooms of the Bride:
1st, J. Pritchard, $10.
Twenty-five blooms of Bridesmaid:
1st, J. Pritchard, $10.
Twenty-five blooms of Liberty:
1st, Waban Rose Conservatories, $12.
Twenty-five blooms of any other variety:
1st, Waban Rose Conservatories, $8.
CARNATIONS.—Vase of one hundred cut blooms, with foliage, not less than six varieties:
1st, J. S. Bailey, $8; 2d, P. B. Bradley, $6.
Twenty-five blooms of any named Crimson variety:
1st, M. A. Patten, $3.

Twenty-five blooms of any named Dark Pink variety:
1st, M. A. Patten, $3; 2d, J. H. White, $2.
Twenty-five blooms of any named Light Pink variety:
1st, M. A. Patten, $3; 2d, M. A. Patten, $2.
Twenty-five blooms of any named White variety:
1st, M. A. Patten, $3; 2d, M. A. Patten, $2.
Twenty-five blooms of any named White Variegated variety:
1st, M. A. Patten, $3.

VIOLETS.—Bunch of one hundred blooms of Lady Hume Campbell:
1st, N. F. Comley, $3; 2d, Col. C. Pfaff, $2.
Bunch of one hundred blooms of Marie Louise:
1st, N. F. Comley, $3.
Bunch of one hundred blooms of any other double variety:
1st, N. F. Comley $3; 2d, N. F. Comley, $2.
Bunch of one hundred blooms of any single variety:
1st, W. Simms, $3; 2d, N. F. Comley, $2.

Gratuities:—

Col. C. Pfaff, Display of Roses, $12.
Miss E. J. Clark, Vase of Carnations, $2.
Col. C. Pfaff, Display of Orchids, $5.
N. F. Comley, Display of Camellias, $4.
J. H. White, Polyanthus, $2.
Mrs. E. M. Gill, Display, $4.

APRIL 5.

General Display.—Arranged for effect, in space of thirty or more square feet:
1st, J. S. Bailey, $6; 2d, Mrs. E. M. Gill, $4.
General Display.—Arranged for effect, in space of twelve or more square feet:
1st, H. H. Rogers, $2; 2d, H. H. Rogers, $1.

MAY 10.

TULIPS.—Forty-eight blooms, not less than twelve named varieties:
1st, Dr. C. G. Weld, $4.

PANSIES.—Forty-eight blooms, not less than four varieties:
2d, Mrs. E. M. Gill, $4.

Gratuity:—

Mrs. E. M. Gill, Display of Cut Flowers, $3.

RHODODENDRON EXHIBITION.

JUNE 7. (*Changed from June 6, 7 and 8.*)

H. H. Hunnewell Fund.

RHODODENDRONS.—Twelve distinct varieties of unquestioned hardiness, named:
1st, Mrs. J. L. Gardner, $20.
Six distinct varieties of unquestioned hardiness, named:
1st, Mrs. B. P. Cheney, $10.
Six tender varieties, named:
2d, Mrs. J. L. Gardner, $4.
Three tender varieties, named:
1st, Mrs. J. L. Gardner, $4.
HARDY AZALEAS.—Six varieties, one vase of each:
1st, Mrs. J. L. Gardner, $3.
Cluster of trusses, one variety:
2d, Mrs. J. L. Gardner, $1.

Society's Prizes.

GERMAN IRISES.—Thirty-six vases of three trusses each, of not less than twelve varieties:
1st, Mrs. J. L. Gardner, $4.
HARDY PYRETHRUMS.—Display of thirty bottles, Single and Double, six or more varieties:
1st, A. McLaren, $6; 2d, W. J. Clemson, $4.
Vase of Flowers:
1st, Mrs. E. M. Gill, $4; 2d, Miss H. B. Winter, $3.

Gratuities:—

Mrs. B. P. Cheney, Display of Rhododendrons, $30.
Mrs. J. L. Gardner, " " " $12.
Hon. E. S. Converse, " " " $8.
W. J. Clemson, Vase of Pæonies, $5,
A. H. Fewkes, Display of Pæonies, $4.
C. W. Parker, Vase of *Iris pallida Dalmatica*, $1
W. H. Heustis & Son, *Kalmia latifolia*, $1.
Mrs. H. L. Higginson, Vase of *Clematis montana*, $1.
Blue Hill Nurseries, Hardy Perennials, $5.
J. S. Chase, Display, $2.
Mrs. E. M. Gill, Display, $2.

PÆONY EXHIBITION.

JUNE 14.

HERBACEOUS PEONIES.—Collection of thirty or more named varieties, Double:

1st, T. C. Thurlow, $12; 2d, G. Hollis, $10.

Collection of twelve or more named varieties:

1st, T. C. Thurlow, $6.

Specimen Bloom:

1st, J. H. White, $2; 2d, G. Hollis, $1.

Vase of blooms on long stems, arranged for effect in the Society's large China vases:

1st, Mrs. J. L. Gardner, $10; 2d, G. Hollis, $8; 3d, Mrs. E. M. Gill, $6; 4th, A. F. Estabrook, $4.

FOXGLOVES.—Twelve spikes:

1st, Mrs. J. L. Gardner, $3; 2d, Mrs. J. L. Gardner, $2; 3d, W. Whitman, $1.

Gratuities:—

O. B. Hadwen, Display of Pæonies, $5.
J. S. Chase, " " " $2.
Mrs. J. L. Gardner, Foxgloves, $2.
W. Whitman, " $1.
F. J. Rea, *Campanula persicifolia grandiflora*, $3.
Mrs. J. L. Gardner, Sweet Williams, $2.
Mrs. J. B. Lawrence, Lychnis, $1.
Dr. O. S. Paige, Pansies, $1.
Dr. O. S. Paige, Display of Roses, $2.
W. J. Clemson, Display of Roses and Gloxinias, $10.
Mrs. E. M. Gill, Display, $3.
Mrs. J. B. Lawrence, Display, $2.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 19 AND 20. (*Changed from June 24 and 25.*)

Theodore Lyman Fund.

HARDY ROSES.—Twenty-four distinct named varieties:

1st, J. H. White, $25; 2d, Miss E. J. Clark, $20.

Society's Prizes.

Sixteen named varieties, three of each variety:
1st, Dr. O. S. Paige, $15; 2d, Miss E. J. Clark, $10.

Twelve named varieties, three of each:
1st, A. F. Estabrook, $10.

Three named varieties, three of each:
1st, J. H. White, $3; 2d, Miss E. J. Clark, $2.

Twenty-four named varieties, one of each:
1st, Dr. O. S. Paige, $10.

Eighteen named varieties, one of each:
1st, J. H. White, $8; 2d, Miss E. J. Clark, $6; 3d, Mrs. J. L. Gardner, $4.

Twelve named varieties, one of each:
1st, Miss E. J. Clark, $6; 2d, J. H. White, $4.

Six named varieties, one of each:
1st, J. H. White, $4; 2d, Miss E. J. Clark, $3.

Twenty-four blooms of Mme. Gabriel Luizet:
1st, Miss E. J. Clark, $8; 2d, P. B. Bradley, $6; 3d, A. F. Estabrook, $4.

Six blooms of Baroness Rothschild:
1st, P. B. Bradley, $3; 2d, Dr. O. S. Paige, $2.

Six blooms of any other variety:
1st, P. B. Bradley, $4; 2d, A. F. Estabrook, $3; 3d, P. B. Bradley, $2; 4th, E. S. Converse, $1.

Best single bloom of any variety:
1st, P. B. Bradley, $2: 2d, Dr. O. S. Paige, $1.

General Display.—One hundred bottles of Hardy Roses, in the Society's racks, buds admissible;
1st, Mrs. E. M. Gill, $10; 2d, W. J. Clemson, $9; 3d, Dr. O. S. Paige, $8; 4th, Mrs. J. L. Gardner, $7; 5th, Miss E. J. Clark, $6; 6th, P. B. Bradley, $5.

Sweet Williams.—Display, eighteen vases of three trusses each, not less than six varieties:
1st, W. J. Clemson, $4; 2d, Mrs. J. L. Gardner, $3; 3d, W. E. Coburn, $2.

Vase of Flowers.—Best arranged:
1st, Mrs. E. M. Gill, $5; 2d, Miss H. B. Winter, $4.

Basket of Roses.—Arranged for effect:
1st, Mrs. E. M. Gill, $5.

Gratuities:—

Mrs. J. L. Gardner, Display of Roses, $4.
Mrs. E. M. Gill, Display of Roses, $4.
Mrs. E. A. Wilkie, Display of Roses and Nymphæas, $2.

W. J. Clemson, Sweet Williams, $2.
Mrs. J. L. Gardner, Display of Sweet Williams, $2.
G. Hollis, Display of Seedling Pæonies, $5.
J. S. Chase, Vase of Pæonies, $4.
Mrs. E. M. Gill, Vase of Pæonies, $2.
Mrs. J. L. Gardner, Vase of Foxgloves, $4.
Mrs. J. L. Gardner, Vase of Delphiniums, $3.
H. A. Wheeler, *Amaryllis Formosissima*, $1.
J. H. White, Collection, $2.

JULY 5. (*Changed from July 12.*)

IRIS KÆMPFERI.—Fifteen varieties, three of each:
1st, Mrs. J. L. Gardner, $6; 2d, T. C. Thurlow, $4.
Six varieties, three of each, in vases:
1st, Mrs. J. L. Gardner, $3; 2d, Mrs. J. L. Gardner $2.
SWEET WILLIAMS.—Auricula flowered, thirty spikes, of not less than six distinct varieties:
2d, W. J. Clemson, $2.
DELPHINIUMS.—Collection of twenty spikes, not less than five varieties:
1st, Mrs. J. L. Gardner, $5; 2d, C. Blomberg, $4.
Display, thirty vases, of three spikes each:
1st, Mrs. J. L. Gardner, $10.
HARDY HERBACEOUS FLOWERS.—Thirty bottles:
1st, Blue Hill Nurseries, $6; 2d, W. J. Clemson, $5.
VASE OF FLOWERS.—1st, Mrs. E. M. Gill, $4; 2d, Miss H. B. Winter, $3.

Gratuities:—

F. J. Rea, Display of Crimson Rambler Rose, $3.
W. J. Clemson, Sweet Peas, $3.
L. H Atkins, Shirley Poppies, $2.
W. J. Clemson, Collection of flowers, $3.
C Blomberg, " " " $1.
Mrs. E. M. Gill, Display, $2.

JULY 12. (*Changed from July 19.*)

HOLLYHOCKS.—Best display, single and double varieties, in flat dishes:
1st, E. L. Lewis, $5; 2d, J. S. Chase, $4.
SHIRLEY POPPIES.—Display:
1st, L. H. Atkins, $3; 2d, Mrs J. Lewis, $2.
VASE OF FLOWERS.—Best arranged:
1st, Mrs. E. M. Gill, $4; 2d, W. C. Winter, $3.

Gratuities:—

G. Hollis, Display of Perennial Phloxes, $1.
Mrs. E. M. Gill, Danebrog Poppies, $1.
Miss A. H. Warburton, Crimson Rambler Roses and Poppies, $1.
Col. C. Pfaff, Display of Hybrid Roses, $4.
W. J. Clemson, Collection of Roses and Gloxinias, $2.
W. J. Clemson, Display of Sweet Peas, named, $3.
E. L. Lewis, Sweet Peas, $1.
Mrs. J. B. Lawrence, Display of Dianthuses, $1.
B. P. Ware, Nymphæas, $1.
Blue Hill Nurseries, Display Herbaceous Plants and Cut Flowers, $3.
Mrs. J. B. Lawrence, Herbaceous Plants, Cut Blooms, $2.

JULY 19. (*Changed from July 26.*)

TUBEROUS BEGONIAS.—Collection, arranged with their own foliage, in flat dishes:
1st, E. S. Converse, $4.

HARDY AQUATIC FLOWERS.—Collection named:
1st, O. Ames, $8; 2d, Mrs. J. L. Gardner, $6.
General Display.—Arranged for effect, in space of twelve or more square feet:
1st, Mrs. E. M. Gill, $6; 2d, Miss H. B. Winter, $4.

Gratuities:

B. P. Ware, Display of Nymphæas, $1.
W. J. Clemson, Display of Perennial Phloxes, $2.
W. J. Clemson, Display of *Phlox Drummondi*, $1.
G. Hollis, Display of named Hardy Phloxes, $1.
E. L. Lewis, Display of Hollyhocks, $4.
W. J. Clemson, Sweet Peas, named, $2.
Mrs. J. Lewis, Display of Annual Poppies, $1.
B. F. Flanders, Display of Dahlias, $1.
J. E. Rothwell, Display of Cut Orchids, $6.

JULY 26. (*Changed from August 2.*)

SWEET PEAS.—Display of named varieties, filling thirty vases, arranged with their own foliage:
1st, W. J. Clemson, $6; 2d, E. L. Lewis, $4.

HARDY HERBACEOUS FLOWERS.—Thirty bottles:
1st, W. J. Clemson, $6; 2d, C. Blomberg, $5.

VASE OF FLOWERS.—For table decoration:
1st, Mrs. E. M. Gill, $4; 2d, Miss H. B. Winter, $3.

Gratuities:—

Blue Hill Nurseries, Display of Herbaceous Plants, $2.
C. Blomberg, " " " " $1.
Blue Hill Nurseries, Display of Perennial Phloxes, $1.
W. J. Clemson, " " " " $1.
Mrs. G. Duncan, " " " " $1.
G. Hollis, " " " " $1.
E. L. Lewis, Display of Hollyhocks, $2.
Mrs. E. M. Gill, Display of Roses, $1.
A. Nixon, Display of Cut Flowers, $1.

AUGUST 2. (*Changed from August 9.*)

PERENNIAL PHLOXES.—Twelve named varieties, one truss of each:
1st, T. C. Thurlow, $5; 2d, G. Hollis, $4.

ANTIRRHINUMS.—Display of thirty vases, three spikes in each, not less than ten varieties:
1st, Mrs. J. B. Lawrence, $3; 2d, W. J. Clemson, $2.

General Display.—Arranged for effect in space of thirty or more square feet:
1st, Mrs. E. M. Gill, $6; 2d, Miss H. B. Winter, $4.

General Display.—Arranged for effect, in space of twelve or more square feet:
1st, Mrs. J. Lewis, $2; 2d, Mrs. E. M. Gill, $1.

Gratuities:—

T. C. Thurlow, Display of Perennial Phloxes, $4.
W. J. Clemson, Display of Phloxes, $1.
B. F. Flanders, Display of Dahlias, $3.
F. A. Blake, Display of Gloxinias, $3.
Shady Hill Nursery Co., Display of Herbaceous Plants and Cut Flowers, $7.

AUGUST 9. (*Changed from August 16.*)

ANNUALS.—General Display, named, not less than fifty varieties, filling not less than one hundred and fifty bottles:
1st, E. S. Converse, $12; 2d, Mrs. J. L. Gardner, $10.

Gratuities:—

G. Hollis, Display of Perennial Phloxes, $1.
B. F. Flanders, Display of Dahlias, $2.
Mrs. J. B. Lawrence, Display of Dahlias, $1.

A. F. Schenkelberger, Display of named Gladioli, $1.
E. L. Lewis, Display of Sweet Peas and Roses, $1.
Mrs. E. M. Gill, Display of Cut Flowers, $4.
Mrs. J. B. Lawrence, Display of Cut Flowers, $1.

AUGUST 16. (*Changed from August 23.*)

MONTBRETIAS.—Display in Vases:
2d, Mrs. J. B. Lawrence, $2.

PERENNIAL PHLOXES.—General display, in not less than thirty vases:
1st, T. C. Thurlow, $8; 2d, G. Hollis, $6; 3d, Mrs. G. Duncan, $4.

Gratuities:—

W. Whitman, Display of Perennial Phloxes, $4.
J. B. Lawrence, Display of Dahlias, $2.
W. P. Lothrop, " " " $2.
R. P. Struthers, " " " $1.

AUGUST 23. (*Changed from August 30.*)

Theodore Lyman Fund.

ASTERS.—Large flowered, of all classes, fifty vases, not less than twelve varieties, three flowers in each vase:
1st, F. A. Blake, $6; 2d, W. Whitman, $5.

VICTORIA AND PEONY FLOWERED.—Thirty blooms, not less than twelve varieties:
1st, J. H. White, $4; 2d, W. Whitman, $3; 3d, F. A. Blake, $2.

SEMPLE.—Thirty blooms, not less than three varieties:
2d, E. S. Converse, $3.

POMPON.—Twenty-four cut plants, not less than six varieties:
1st, W. Whitman, $4.

HARDY HERBACEOUS FLOWERS.—Thirty bottles:
1st, Shady Hill Nursery, $6; 2d, C. Blomberg, $5.

Gratuities:—

Mrs. J. L. Gardner, Display of Asters, $3.
E. S. Converse, " " " $1.
C. Blomberg, Display of Herbaceous Plants, $1.
F. J. Rea, Display of Gladioli, $1.
W. Whitman, Display of Gladioli and Asters, $3.
W. P. Lothrop, Display of Asters and Dahlias, named, $3.
G. Hollis, two large vases of Cut Flowers, $1.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 11, 12, 13 AND 14.

Theodore Lyman Fund.

AQUATICS.—General Display of Nymphæas, Nelumbiums, Sedges, Papyrus, and other Aquatic Plants, arranged for effect, to include not less than twenty-five blooms of Nymphæas:
1st, O. Ames, $25.

GLADIOLI.—Display of named and unnamed varieties, filling one hundred vases, arranged for effect, with any foliage:
1st, W. P. Lothrop, $8.

Society's Prizes.

DAHLIAS.—Show, eighteen blooms, named varieties:
1st, W. C. Winter, $4; 2d, H. F. Burt, $3.
Fancy, eighteen blooms, named varieties:
1st, H. F. Burt, $4.
Cactus, twelve blooms, named varieties:
1st, H. F. Burt, $4; 2d, W. H. Symonds, $3; 3d, W. P. Lothrop, $2.
Decorative, twelve blooms, named varieties:
1st, W. C. Winter, $4; 2d, W. P. Lothrop, $3; 3d, H. F. Burt, $2.
Show, six blooms, named varieties:
1st, W. C. Winter, $2; 3d, W. C. Winter, $1.
Fancy, six blooms, named varieties:
1st, H. F. Burt, $2; 2d, H. F. Burt, $1.
Best single bloom, of any class, introduction of 1900 or later:
1st, W. P. Lothrop, $1.
Pompon, twelve vases of three blooms each, named varieties:
1st, J. K. Alexander, $3; 2d, W. C. Winter, $2; 3d, W. P. Lothrop, $1.
Single, twelve vases of three blooms each, named varieties:
1st, W. C. Winter, $2; 2d, H. F. Burt, $1.
General Display, one hundred or more bottles, in the Society's racks, arranged for effect:
1st, W. C. Winter, $12; 2d, J. K. Alexander, $10; 3d, Mrs. J. B. Lawrence, $8; 4th, W. G. Winsor, $6; 5th, W. H. Symonds, $4.

TROPÆOLUMS.—Display, with their foliage, filling twenty-five vases, not over eighteen blooms of one variety:
1st, Mrs. E. M. Gill, $3; 2d, E. S. Converse, $2.

MARIGOLDS.—Display of French and African, filling twenty-five vases:
1st, W. Whitman, $3; 2d, Mrs. J. L. Gardner, $2.

DOUBLE ZINNIAS.—Fifty flowers, not less than twelve varieties:
1st, Col. C. Pfaff, $3; 2d, Mrs. J. L. Gardner, $2.

China Asters.—Display of Large Flowered, of all classes, not less than fifty vases, three flowers in each:

1st, Col. C. Pfaff, $8; 2d, Miss F. H. Breed, $6; 3d, W. Whitman, $4.

Perennial Asters.— Collection of Native or Introduced species and varieties:

1st, Mrs. E. M. Gill, $5; 2d, Misses E. A. and M. S. Doran, $4.

Dianthuses.—Collection of Annual and Biennial varieties, filling thirty bottles:

1st, Mrs. J. B. Lawrence, $3.

Ornamental Fruited Hardy Trees and Shrubs.—Collection of Cut Branches, named:

1st, Col. C. Pfaff, $5.

Hardy Herbaceous Flowers.—Thirty bottles:

1st, Blue Hill Nurseries, $6; 2d, Shady Hill Nursery, $5.

Vase of Flowers.—For table decoration:

1st, Mrs. E. M. Gill, $4; 2d, Miss H. B. Winter, $3.

Gratuities:—

H. F. Burt, Display of Dahlias, $6.
N. W. T. Knott, " " " $2.
R. P. Struthers, " " " $2.
E. S. Converse, Display of China Asters, $1.
C. L. Hovey, Display of Marigolds, $1.
O. B. Hadwen, Display of Gladioli, $3.
F. J. Rea, Display of Gladioli and Perennial Asters, $1.
A. B. Howard, Collection of Petunias and Verbenas, $2.
G. McWilliams, Collection of Dipladenias, $5.
Mrs. H. L. Higginson, Vase of *Lilium Wallichianum Superbum*, $1.
Henry A. Dreer, Exhibit of Nymphæas, $10.
Henry A. Dreer, " " " $10.
Col. C. Pfaff, Collection of Hardy Cut Flowers and Shrubs, $2.
Mrs. E. M. Gill, Display of Cut Flowers, $4.

OCTOBER EXHIBITION OF FRUITS AND VEGETABLES.

October 3 and 4.

Gratuities:—

H. F. Burt, Display of Cactus, Fancy, and Show Dahlias, $10.
W. P. Lothrop, Display of Dahlias, $5.
H. F. Burt, Display of Show Dahlias, $4.
C. L. Hovey, Display of Dahlias, $4.
Mrs. E. M. Gill, " " " $4.

R. & J. Farquhar & Co., Display of Liliums, $6.
R. & J. Farquhar & Co., Display of Gladioli, $6.
Blue Hill Nurseries, Display of Herbaceous Flowers, $8.

CHRYSANTHEMUM SHOW.

NOVEMBER 6, 7, 8 AND 9.

Special Prizes.

Josiah Bradlee Fund.

CHRYSANTHEMUMS.—Twenty-five blooms, of twenty-five distinct varieties, named, a piece of plate or value in money:
1st, Mrs. B. P. Cheney, $18; 2d, Miss E. J. Clark, $12.
Six Vases of six named varieties, ten blooms each:
1st, Mrs. A. W. Spencer, $30; 2d, Miss E. J. Clark, $25.

Henry A. Gane Memorial Fund.

For the best twelve specimen blooms of any of the Seedling Chrysanthemums originated by the late Henry A. Gane:
1st, C. D. Sias, $20; 2d, Mrs. A. W. Spencer, $10.

Society's Prizes.

Twelve blooms, Japanese, named, in vases:
1st, Mrs. B. P. Cheney, $10; 2d, Miss E. J. Clark, $6.
Twelve blooms, Japanese Incurved, named, in vases:
1st, Mrs. B. P. Cheney, $10; 2d, Miss E. J. Clark, $6; 3d, P. B. Robb, $4.
Twelve blooms, Anemone, named, in vases:
1st, E. S. Converse, $8.
Six blooms, Incurved, named, in vases:
1st, E. S. Converse, $5.
Six blooms, Japanese, named, in vases:
1st, Miss E. J. Clark, $6; 2d, Mrs. B. P. Cheney, $4; 3d, P. B. Robb, $2.
Six blooms, Japanese Incurved, named, in vases:
1st, Mrs. B. P. Cheney, $6; 2d, J. J. Albright, $4; 3d, P. B. Robb, $2.
Six blooms, Reflexed, named, in vases:
1st, Mrs. B. P. Cheney, $6; 2d, J. J. Albright, $4; 3d, P. B. Robb, $2.
Six blooms, Anemone, named, in vases:
1st, E. S. Converse, $5; 3d, E. S. Converse, $2.
Six best varieties, named, introductions of the current year:
1st, Miss E. J. Clark, $6.

Vase of ten blooms, on long stems, Pink, named:
1st, Mrs. A. W. Spencer, $10; 2d, C. D. Sias, $8; 3d, Miss E. J. Clark, $6.

Vase of ten blooms, on long stems, Red, named:
1st, Mrs. A. W. Spencer, $10; 2d, Miss E. J. Clark, $8; 3d, Mrs. B. P. Cheney, $6.

Vase of ten blooms, on long stems, White, named:
1st, Mrs. A. W. Spencer, $10; 2d, Mrs. A. W. Spencer, $8; 3d, C. D. Sias, $6.

Vase of ten blooms, on long stems, Yellow, named:
1st, Mrs. A. W. Spencer, $10; 2d, C. D. Sias, $8; 3d, Miss E. J. Clark,

Vase of ten blooms, on long stems, any other color named:
1st, C. D. Sias, $10; 2d, Mrs. A. W. Spencer, $8; 3d, Mrs. B. P. Cheney, $6.

VIOLETS.—Collection of varieties, fifty blooms each:
1st, N. F. Comley, $5; 2d, Col. C. Pfaff, $4.

Gratuities:

E. N. Pierce & Sons, Four of the Society's large vases, of Chrysanthemums, $30.
Mrs. E. M. Gill, Display of Chrysanthemums, $12.
Mrs. A. W. Spencer, Display of Chrysanthemums, $10.
E. S. Converse, Display of Single and Pompon Chrysanthemums, $8.
Mrs. B. P. Cheney, Display of Chrysanthemums, $5.
G. A. Clark, Vase of Chrysanthemums, $3.
Col. Charles Pfaff, Display of Orchids, $6.
Patten & Co., Twelve vases assorted Carnations, $12.
S. J. Reuter, two vases of Carnations, $5.
G. J. Small, " " " " $4.
Little South Floral Co., Display of Carnations, $3.
H. A. Stevens & Co., Vase of Carnation, Gov. Wolcott, $1.
S. J. Goddard, Vase of Carnation, The Queen, $1.
C. Jurgens, Large vase of American Beauty Roses, $7.

SOCIETY'S SILVER GILT MEDALS.

February 8. Mrs. J. L. Gardner, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Spring Exhibition March 19–23. W. P. Winsor, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Chrysanthemum Show, November 6–9. Mrs. F. L. Ames, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

KELWAY SILVER GILT MEDAL.

(*Offered by Kelway & Son, Langport, England.*)

Pæony Exhibition, June 14. A. H. Fewkes, first prize for Collection of Herbaceous Pæonies, named varieties, single or double.

SOCIETY'S SILVER MEDAL.

February 8. Col. C. Pfaff, second prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Spring Exhibition, March 19–23. J. E. Rothwell, second prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Rose and Strawberry Exhibition, June 19 and 20. F. J. Rea, for *Campanula persicifolia Moerheimii.*

Chrysanthemum Show, November 6–9. O. Ames, second prize for Display of Orchids, named species and varieties, single or double.

Chrysanthemum Show. P. Fisher, for large vase of Carnation, Enchantress. (New.)

Chrysanthemum Show. A. Roper, for large vase of Carnation, Fair Maid. (New.)

Chrysanthemum Show. E. G. Asmus, for Twentieth Century Rose, F. Deegen.

KELWAY BRONZE MEDAL.

(*Offered by Kelway & Son, Langport, England.*)

Pæony Exhibition, June 14. G. Hollis, second prize for Collection of Herbaceous Pæonies, named varieties, single or double.

FIRST CLASS CERTIFICATES OF MERIT.

Rhododendron Exhibition, June 7. F. J. Rea, for Collection of German Irises, named.

Rose and Strawberry Exhibition, June 19 and 20. G. Hollis, for Pæony Maud L. Richardson.

Rose and Strawberry Exhibition, June 19 and 20. G. Hollis, for Pæony Goliath.

July 5. A. H. Brigham, for white variety of *Cypripedium spectabile.*

Annual Exhibition of Plants and Flowers, September 11–14. H. A. Dreer, for Nymphæa Mrs. C. W. Ward.

October Exhibition of Fruits and Vegetables, October 3 and 4. R. & J. Farquhar, for new type of single Dahlia, designated "Collerette Dahlia" named President Viger.

Chrysanthemum Show, November 6–9. W. Hunnewell, Sport from Chrysanthemum Oriental Glory, unnamed.

HONORABLE MENTION.

Spring Exhibition, March 19–23. M. H. Walsh, for Seedling Rambler Rose Miss Simplicity.

Rose and Strawberry Exhibition, June 19 and 20. G. Hollis, for Pæony Seedling No. 28.

July 5. F. J. Rea, for Rosa Wichuraiana hybrida Dorothy Perkins.

July 5. H. A. Wheeler, for Shasta Daisy.

July 19. G. Hollis, for Seedling Hardy Phlox Gaiety.

August 23. A. Cowee, for Display of Hybrid Gladioli.

Annual Exhibition of Plants and Flowers, September 11–14. H. A. Dreer, for Nymphæa Pennsylvanica.

Annual Exhibition of Plants and Flowers, September 11–14. A. Cowee, for Display of Groff's Hybrid Gladioli.

Annual Exhibition of Plants and Flowers, September 11–14. M. H. Walsh, for Seedling Perennial Phlox.

Annual Exhibition of Plants and Flowers, September 11–14. Floral Company, South Natick, for Carnation The Queen.

Chrysanthemum Show, November 6–9. H. Dale Estate, Brampton, Ontario, for new rose Canadian Queen.

J. Woodward Manning,
Michael H. Norton,
Kenneth Finlayson,
Frederick S. Davis,
James Comley.

Committee on Flowers.

REPORT

OF THE

COMMITTEE ON FRUITS

FOR THE YEAR 1902.

By E. W. WOOD, CHAIRMAN.

The exhibitions of the past year have shown that the different varieties of fruit grown in the State have been more generally represented than usual. The apple crop, as usual on the even calendar year, has been abundant and of good quality. Pears, owing to the cold, wet weather when they were in bloom, did not set a full crop, but they have been fairly represented in the exhibitions. Peaches have been shown in much larger quantities than for several years; the experience of some large growers, especially in Connecticut, seems to show that with improved care and cultivation this most desirable fruit may be successfully grown in New England. With plums we notice an increase of the Japanese varieties though seemingly at the expense of some of the best of the old varieties. The Reine Claude de Bavay, Green Gage, and McLaughlin have not been shown for several years.

The small fruits were shown during the season in the usual quantity. Of new fruits the attention of the committee was called to specimens of peaches, plums, strawberries, and grapes, some of which seemed promising, but have not yet been sufficiently tested to warrant recommendation for general cultivation.

Commercial fruit growers have had a fairly profitable season. Cold storage and constantly increasing foreign demand for apples have prevented a glut in the home market, and prices have been well sustained. The export of apples has been confined almost entirely to the English market. The French and German as well as other foreign markets offer an opportunity for widely extending this trade.

Among growers of pears for market the tendency has been a reduction of the varieties; many varieties formerly grown at a profit have almost disappeared from our markets.

The most unfavorable feature in the outlook for the future of profitable commercial fruit growing is in the increase of insects injurious to almost every tree and plant.

The desire to secure new fruits and flowers and the increased facilities by which they may be obtained have resulted in the addition of many valuable trees, plants, fruits, and flowers; but with them we have received some of the most injurious insects with which the fruit grower has to contend, largely increasing the labor and expense necessary to preserve the trees and produce merchantable fruit.

The committee has awarded in premiums and gratuities $1,600, leaving an unexpended balance of $100.

PRIZES AND GRATUITIES AWARDED FOR FRUITS.

1902.

SPRING EXHIBITION.

MARCH 19, 20, 21, 22 AND 23.

WINTER APPLES.—Baldwin:

1st, G. V. Fletcher, $3; 2d, A. E. Hartshorn, $2; 3d, M. W. Chadbourne, $1.

Northern Spy:

1st, G. V. Fletcher, $3; 2d, G. C. Rice, $2.

Roxbury Russet:

1st, G. V. Fletcher, $3; 2d, A. E. Hartshorn, $2; 3d, H. R. Kinney, $1.

Tompkins King:
1st, G. C. Rice, $3.
Any other variety;
1st, G. V. Fletcher, Rhode Island Greening, $3; 2d, W. H. Hunt, Hunt Russet, $2; 3d, G. V. Fletcher, Mackintosh, $1.

WINTER PEARS.—Any variety:
1st, G. V. Fletcher, Anjou, $3; 2d, W. Fenno, Josephine of Malines, $2.

STRAWBERRIES.—One pint:
1st, E. S. Converse, $3.

JUNE 7. (*Changed from June 6, 7 and 8.*)

Gratuity:—

W. C. Winter, Nectarines, $1.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 19 AND 20. (*Changed from June 24 and 25.*)

Theodore Lyman Fund.

STRAWBERRIES.—Four quarts of any variety:
1st, V. Frost, the Lyman Plate, value $20; 2d, G. V. Fletcher, the Lyman Plate, value $16; 5th, G. F. Wheeler, the Lyman Plate, value, $8.

Special Prizes offered by the Society.

Two quarts of any variety best adapted for garden cultivation for home use:
1st, G. V. Fletcher, Marshall, $6; 3d, I. E. Coburn, Jessie, $4: 4th, G. F. Wheeler, Minute Man, $3.

Regular Prizes.

For the largest and best collection, not less than fifteen baskets of two quarts each, and not less than five varieties:
1st, I. E. Coburn, $20; 2d, G. F. Wheeler, $15.

Ten baskets, not less than three varieties, two quarts each:
1st, I. E. Coburn, $15; 2d, G. V. Fletcher, $12; 3d, G. F. Wheeler, $10; 4th, W. Wheeler, $8.

Five baskets of one variety, two quarts each:
1st, G. V. Fletcher, $8; 2d, I. E. Coburn, $6; 3d, G. F. Wheeler, $5; 4th, W. Wheeler, $4.

Two quarts of Belmont:
1st, I. E. Coburn, $4; 2d, G. V. Fletcher, $3.
Brandywine:
1st, E. S. Converse, $4; 3d, G. F. Wheeler, $2.
Bubach:
1st, G. V. Fletcher, $4; 2d, O. R. Robbins, $3.
Clyde:
1st, G. V. Fletcher, $4; 3d, G. F. Wheeler, $2.
Crescent:
3d, G. F. Wheeler, $2.
Haverland:
1st, I. E. Coburn, $4; 2d, G. F. Wheeler, $3; 3d, W. Wheeler, $2.
Hersey:
3d, G. F. Wheeler, $2.
Jessie:
1st, I. E. Coburn, $4.
Marshall:
1st, G. V. Fletcher, $4; 2d, V. Frost, $3; 3d, J. A. Beebe, $2.
Miner's Prolific:
1st, G. F. Wheeler, $4; 2d, W. Wheeler, $3.
Nick Ohmer:
1st, J. A. Beebe, $4; 2d, I. E. Coburn, $3; 3d, E. S. Converse, $2.
Parker Earle:
1st, I. E. Coburn, $4.
Sample:
1st, I. E. Coburn, $4; 2d, E. S. Converse, $3; 3d, G. V. Fletcher, $2.
Any other variety:
1st, S. H. Warren, Great Scott, $4; 2d, I. E. Coburn, Ridgeway, $3; 3d, G. F. Wheeler, Minute Man, $2.
One quart of any variety not previously exhibited:
1st, S. H. Warren, Great Scott, $5; 2d, S. H. Warren, No. 19, $4.

CHERRIES.—Two quarts of any variety:
1st, Miss E. W. Rumrill, Black Tartarian, $4; 2d, J. H. Fletcher, Royal Ann, $3; 3d, G. V. Fletcher, Black Tartarian, $2.

FOREIGN GRAPES.—Two bunches of any variety:
1st, Miss E. J. Clark, Black Hamburg, $6; 2d, W. C. Winter, Muscat of Alexandria, $4.

FORCED PEACHES.—Six specimens of any variety:
1st, Miss E. J. Clark, Hale's Early, $3.

Gratuity:—

P. B. Bradley, Nectarines, $3.

JULY 5. (*Changed from July 12.*)

STRAWBERRIES.—Two quarts of any variety:
1st, W. H. Monroe, Seedling, $4; 2d. G. V. Fletcher, Marshall, $3.

CHERRIES.—Two quarts of Black Eagle:
1st, G. V. Fletcher, $3; 2d, E. S. Converse, $2.

Black Tartarian:
1st, G. V. Fletcher, $3.

Coe's Transparent:
1st, C. S. Smith, $3; 2d, J. L. Bird, $2.

Downer:
1st, M. W. Chadbourne, $3; 2d, C. S. Smith, $2; 3d, E. S. Converse, $1.

Any other variety:
1st, M. W. Chadbourne, White Heart, $3; 2d, C. P Travis, Elton, $2; 3d, C. S. Smith, Hyde Seedling, $1.

Gratuity:—

J. S. Chase, Triumph Gooseberries, $1.

JULY 12. (*Changed from July 19.*)

RASPBERRIES.—Two quarts of any variety:
1st, Mrs. E. J. Cutter, $3; 2d, E. S. Converse, $2.

CURRANTS.—Two quarts of any Red variety:
1st, W. J. Clemson, Versaillaise, $4; 2d, W. J. Clemson, Fay's, $3; 3d, D. Mahoney, Fay's, $2; 4th, C. Pfaff, Fay's, $1.

Two quarts of any White variety:
1st, C. Pfaff, White Grape, $3; 2d, J. S. Chase, Transparent, $2; 3d, W. J. Clemson, White Grape, $1.

GOOSEBERRIES.—Two quarts of any variety of American origin:
1st, J. S. Chase, Triumph, $4; 2d, W. J. Clemson, Columbus, $3; 3d, J. S. Chase, Columbus, $2; 4th D. Mahoney, Columbus, $1.

Gratuities:—

W. J. Clemson, Collection of Cherries, $2.
M. W. Chadbourne, Cherries, $1.
W. C. Winter, Collection, $1.
Miss E. J. Clark, Collection of Grapes, Peaches, and Nectarines, a Silver Medal.

JULY 19. (*Changed from July 26.*)

RASPBERRIES.—Two quarts of any variety:
1st, Mrs. E. J. Cutter, $3; 2d, E. L. Lewis, $2; 3d, E. S. Converse, $1.
CURRANTS.—Two quarts of any Red variety:
1st, W. J. Clemson, Versaillaise, $3; 2d, D. L. Fiske, $2.
Two quarts of any White variety:
1st, H. R. Kinney, White Grape, $2.
GOOSEBERRIES.—Two quarts of any foreign variety:
1st, W. J. Clemson, Whitesmith, $4; 2d, D. Mahoney, Whitesmith, $3; 3d, G. L. Brown, Silversmith, $2.

Gratuities:—

W. C. Winter, Plums, $1.
W. J. Clemson, Collection, $1.

JULY 26. (*Changed from August 2.*)

BLACKBERRIES.—Two quarts of any variety:
1st, M. W. Chadbourne, Dorchester, $3.
APPLES.—Tetofsky:
1st, W. C. Winter, $3; 3d, D. L. Fiske, $1.
Yellow Transparent:
1st. E. S. Converse, $3; 2d, G. L. Brown, $2; 3d, D. L. Fiske, $1.
PEARS.—Summer Doyenne:
1st, W. Fenno, $3; 2d, E. S. Converse, $2; 3d, D. L. Fiske, $1.

Gratuities:—

W. J. Clemson, Peaches, $1.
D. L. Fiske, " $1.
A. Low, " $1.

AUGUST 2. (*Changed from August 9.*)

APPLES.—Red Astrachan:
1st, M. W. Chadbourne, $3; 2d, W. H. Hunt, $2; 3d, F. W. Damon, $1.
Sweet Bough:
1st, C. B. Travis, $3; 2d, G. V. Fletcher, $2; 3d, W. Heustis & Son, $1.
Any other variety:
1st, V. Frost, Williams, $3; 2d, E. S. Converse, Yellow Transparent, $2; 3d, J. C. Stone, Williams, $1.
PEARS.—Giffard:
1st, A. T. Brown, $3; 2d, W. Fenno, $2; 3d, F. W. Damon, $1.
Any other variety:
1st, A. T. Brown, Clapp's Favorite, $3; 2d, W. Fenno, Doyenne, $2; 3d, J. L. Bird, Wilder, $1.

BLACKBERRIES.—Two quarts of any variety:
1st, M. W. Chadbourne, $3; 2d, W. J. Clemson, $2; 3d, A. Low, $1.
PEACHES.—Open culture, any variety:
1st, Mrs. E. J. Cutter, Alexander, $3; 2d, D. L. Fiske, Waterloo, $2; 3d, A. Low, Hale's Early, $1.

Gratuity:—

Mrs. J. C. Whitin, Collection of Grapes, Nectarines, and Peaches, $3.

AUGUST 9. (*Changed from August 16.*)

APPLES.—Oldenburg:
1st, Mrs. A. F. Estabrook, $3; 2d, Mrs. H. A. Clark, $2; 3d, W. Fenno, $1.
Any other variety:
1st, V. Frost, Williams, $3; 2d, M. W. Chadbourne, Williams, $2; 3d, W. H. Hunt, Astrachan, $1.
PEARS.—Clapp's Favorite:
1st, Mrs. H. A. Clark, $3; 2d, E. Torrey, $2; 3d, A. T. Brown, $1.
Any other variety:
1st, A. T. Brown, Giffard, $3; 2d, F. W. Damon, Giffard, $2; 3d, W. Fenno, Giffard, $1.
PEACHES.—Twelve specimens of outdoor culture, of any variety:
1st, A. Low, Alexander, $3; 2d, A Low, Hale's Early, $2; 3d, A. M. Clement, Greenboro, $1.
Six specimens of cold house or pot culture:
1st, Mrs. J. C. Whitin, Crimson Garland, $3; 2d, Mrs. J. C. Whitin, Royal George, $2.
BLACKBERRIES.—Two quarts of any variety:
1st, N. T. Kidder, Dorchester, $3; 2d, M. W. Chadbourne, Dorchester, $2; 3d, W. J. Clemson, Agawam, $1.
PLUMS.—Japanese, any variety:
1st, E. L. Lewis, Chabot, $3; 2d, E. L. Lewis, Abundance, $2; 3d, W. Warburton, Abundance, $1.
NECTARINES.—Orchard house culture, twelve specimens:
1st, Mrs. J. C. Whitin, $4.
FOREIGN GRAPES.—Two bunches of any variety:
1st, E. S. Converse, Black Hamburg, $5; 2d, Mrs. J. C. Whitin, Alexander, $4.

AUGUST 16. (*Changed from August 23.*)

APPLES.—Chenango:
1st, C. F. Curtis, $3; 2d, G. L. Brown, $2.
Summer Pippin:
1st, W. Fenno, $3.

Williams:
1st, V. Frost, $1; 2d, J. C. Stone, $2; 3d, A. F. Coolidge, $1.
Any other variety:
1st, W. Fenno, Sops of Wine, $3; 2d, G. V. Fletcher, Sweet Bough, $2; 3d, J. C. Stone, Gravenstein, $1.

PEARS.—Rostiezer:
1st, E. S Converse, $3; 2d, M. W. Chadbourne $2; 3d, A. T. Brown, $1.
Tyson:
1st, J. L. Bird, $3; 2d, W. Fenno, $2.
Any other variety:
1st, A. T. Brown, Clapp's Favorite, $3; 2d, E. Torrey, Clapp's Favorite, $2; 3d, W. Fenno, Clapp's Favorite, $1.

PEACHES.—Any variety:
1st, C. F. Curtis, $3; 2d, A. M. Clement, $2; 3d, G. V. Fletcher, $1.

PLUMS, JAPANESE.—Abundance:
1st, E. L. Lewis, $3; 2d, D. L. Fiske, $2; 3d, J. Dunn, $1.
Burbank:
1st, D. L Fiske, $3; 2d, A. M. Clement, $2; 3d, A. Low, $1.
Any other variety:
1st, G. V. Fletcher, Bradshaw, $3; 2d, E. L. Lewis, Chabot, $2; 3d, D. L. Fiske, Red Nagate, $1.

AUGUST 23. (*Changed from August 30.*)

APPLES.—Foundling:
1st, C. M. Handley, $3.
Gravenstein:
1st, W. Fenno, $3; 2d, Mrs. H. A. Clark, $2; 3d, A. F. Coolidge, $1.
Maiden's Blush:
1st, W. C. Winter, $3; 2d, C. F. Curtis, $2; 3d, W. Fenno, $1.
Porter:
1st, G. V. Fletcher, $3; 2d, W. Heustis & Son, $2; 3d, J. C. Stone, $1.
Any other variety:
1st, J. C. Stone, Williams, $3; 2d, Mrs. H. A. Clark, Oldenburg, $2; 3d, A. E. Henderson, Bietigheimer, $1.

PEARS.—Andrews:
1st, E. S. Converse, $3; 2d, J. C. Stone, $2.
Bartlett:
1st, W. Milman, $3; 2d, V. Frost, $2; 3d, A. T. Brown, $1.
Any other variety:
1st, Mrs. H. A. Clark, Clapp's Favorite, $3; 2d, F. W. Damon, Clapp's Favorite, $2; 3d, J. B. Shurtleff, Jr., Clapp's Favorite, $1.

PEACHES.—Collection:
1st, D. L. Fiske, $3; 2d, A. Low, $2.

Single dish of any variety:
1st, F. H. Evans, Carman, $3; 2d, A. Low, Carman, $2; 3d, D. L. Fiske, St. John, $1.

PLUMS.—Bradshaw:
1st, G. V. Fletcher, $3; 2d, C. F. Curtis, $2; 3d, A. Low, $1.

Any other variety:
1st, W. P. Hutchinson, Lincoln, $3; 2d, E. L. Lewis, Washington, $2; 3d, C. C. Field, Burbank, $1.

AUGUST 30.

Gratuity:—

W. O. Sweet, Collection of Peaches, Plums, and Apples, $2.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 11, 12, 13 AND 14.

Special Prizes.

Theodore Lyman Fund.

For the heaviest and best ripened bunch of any Foreign Black Grape, not less than six pounds:
1st, Miss E. J. Clark, $15.

Society's Prizes.

APPLES.—Fall Orange or Holden:
1st, C. M. Handley, $3; 2d, F. J. Kinney, $2.

Foundling:
1st, C. M. Handley, $3; 2d, O. B. Hadwen, $2; 3d, G. C. Rice, $1.

Garden Royal:
1st, C. M. Handley, $3; 2d, C. B. Travis, $2.

Gravenstein:
1st, J. H. Locke, $3; 2d, W. Heustis & Son, $2; 3d, W. Fenno, $1.

Hubbardston:
1st, C. M. Handley, $3; 2d, L. F. Cooke, $2; 3d, A. E. Hartshorn, $1.

Mackintosh:
1st, W. O. Sweet, $3; 2d, L. Doran, $2; 3d, F. J. Kinney, $1.

Maiden's Blush:
1st, H. R. Kinney, $3; 2d, O. B. Hadwen, $2; 3d, E. E. Cole, $1.

Mother:
1st, H. R. Kinney, $3; 2d, W. Fenno, $2; 3d, W. C. Winter, $1.

Porter:
1st, J. C. Stone, $3; 2d, G. V. Fletcher, $2; 3d, M. W. Chadbourne, $1.
Pumpkin Sweet:
1st, J. Parker, $3; 2d, O. B. Hadwen, $2.
Red Bietigheimer:
1st, J. H. White, $3; 2d, G. C. Rice, $2; 3d, M. Sullivan, $1.
Sutton:
1st, F. J. Kinney, $3; 2d, O. B. Hadwen, $2; 3d, D. L. Fiske, $1.
Washington Strawberry:
1st, G. C. Rice, $3; 2d, A. E. Hartshorn, $2; 3d, W. Fenno, $1.
Wealthy:
1st, G. C. Rice, $3; 2d, W. D. Hinds, $2; 3d, C. M. Handley, $1.
Any other variety:
1st, A. F. Estabrook, Twenty Ounce, $3; 2d, G. C. Rice, Somerset, $2; 3d, W. Fenno, Alexander, $1.

CRAB APPLES.—Transcendent, twenty-four specimens:
1st, C. E. Wiggin, $2; 2d, Miss E. W. Rumrill, $1.
Any other variety:
1st, M. W. Chadbourne, $2; 2d, A. E. Hartshorn, $1.

PEARS.—Bartlett:
1st, V. Frost, $3; 2d, Mrs. H. A. Clark, $2; 3d, W. H. Derby, $1.
Belle Lucrative:
1st, A. T. Brown, $3; 2d, E. S. Converse, $2; 3d, W. Fenno, $1.
Bosc:
1st, J. B. Shurtleff, Jr., $3; 2d, A. T. Brown, $2; 3d, W. H. Derby, $1.
Boussock:
1st, E. Torrey, $3; 2d, C. F. Curtis, $2; 3d, W. Fenno, $1.
Hardy:
1st, W. Milman, $3; 2d, W. Fenno, $2.
Louise Bonne of Jersey:
1st, A. T. Brown, $3; 2d, W. Fenno, $2; 3d, F. W. Damon, $1.
Paradise of Autumn:
1st, W. Milman, $3; 2d, W. Fenno, $2; 3d, G. F. Pierce, $1.
Seckel:
1st, W. Milman, $3; 2d, A. T. Brown, $2; 3d, W. Patterson, $1.
Sheldon:
1st, G. E. Freeman, $3: 2d, F. W. Damon, $2; 3d, A. T. Brown, $1.
Souvenir du Congrès:
1st, W. Fenno, $3; 2d, A. T. Brown, $2.
Any other variety:
1st, E. Torrey, Flemish Beauty, $3; 2d, W. Fenno, Pratt, $2; 3d, W. Heustis & Son, Bonne d' Ezée, $1.

PEACHES.—Coolidge's Favorite:
1st, D. L. Fiske, $3.

Crawford's Early:
1st, D. L. Fiske, $3; 2d, G. V. Fletcher, $2; 3d, J. A. Beebe, $1.
Crosby:
1st, D. L. Fiske, $3; 3d, W. D. Hinds, $1.
Foster:
1st, D. L. Fiske, $3; 2d, J. C. Stone, $2; 3d, S. H. Warren, $1.
Oldmixon Freestone:
1st, D. L. Fiske, $3.
Stump the World:
1st, E. L. Lewis, $3: 2d, D. L. Fiske, $2.
Any other variety:
1st, W. D. Hinds, Champion, $3; 2d, C. F. Curtis, Champion, $2; 3d, F. H. Evans, Elberta, $1.
Any variety of orchard house culture:
1st, J. H. White, $4.

NECTARINES.—Outdoor culture, any variety:
1st, W. Fenno, $2.

PLUMS.—Imperial Gage:
1st, E. S. Converse, $3; 2d, F. J. Kinney, $2.
Lombard:
1st, E. L. Lewis, $3; 2d, V. Frost, $2; 3d, G. V. Fletcher, $1.
Any other variety:
1st, H. R. Kinney, Bradshaw, $3; 2d, V. Frost, Yellow Egg, $2; 3d, G. V. Fletcher, Yellow Egg, $1.

JAPANESE PLUMS.—Any variety:
1st, W. Warburton, $3; 2d, D. L. Fiske, $2; 3d, W. C. Winter, $1.

FOREIGN GRAPES.—Two bunches of Black Alicante:
1st, Miss E. J. Clark, $5; 2d, Mrs. J. C. Whitin, $4.
Lady Downs:
1st, Miss E. J. Clark, $5.
Muscat of Alexandria:
1st, Miss E. J. Clark, $5; 2d, Mrs. J. C. Whitin, $4.
Any other variety:
1st, Miss E. J. Clark, Gros Guillaume, $5; 2d, Miss E. J. Clark, Gros Maroc, $4; 3d, Miss E. J. Clark, Mrs. Pearson, $3.

NATIVE GRAPES.—Six bunches of Campbell's Early:
1st, F. J. Kinney, $3; 2d, L. Darling, $2.
Massasoit:
1st, J. S. Chase, $3; 2d, F. W. Damon, $2.
Moore's Early;
1st, G. W. Jameson, $3; 2d, E. L. Lewis, $2; 3d, F W. Damon, $1.
Any other variety:
1st, J. S. Chase, Delaware, $3; 2d, H. R. Kinney, Worden, $2; 3d, F. W. Damon, Lindley, $1.
Six bunches from girdled vines, of any variety:
1st, H. R. Kinney, Worden, $3; 2d, H. R. Kinney, Green Mountain, $2

Gratuities:—

H. Eaton, Collection of Apples from dwarf trees set out in 1889, $2.

M. W. Chadbourne, Collection, $2.

OCTOBER EXHIBITION OF FRUITS AND VEGETABLES.

OCTOBER 3 AND 4.

Special Prizes.

Samuel Appleton Fund.

APPLES.—Baldwin:

1st, J. C. Stone, $4; 2d, M. Sullivan, $3; 3d, Goodell Farm, $2; 4th, M. W. Chadbourne, $1.

Hubbardston:

1st, A. Frost, $4; 2d, C. M. Handley, $3; 3d, F. J. Kinney, $2; 4th, L. F. Cooke, $1.

PEARS.—Bosc:

1st, C. F. Curtis, $4; 2d, G. V. Fletcher, $3; 3d, A. T. Brown, $2; 4th, J. L. Bird, $1.

Sheldon:

1st, E. Torrey, $4; 2d, J. L. Bird, $3; 3d, G. V. Fletcher, $2; 4th, A. T. Brown, $1.

Benjamin V. French Fund.

APPLES.— Gravenstein:

1st, C. F. Boyden, $4; 2d, C. E. Gates, $3; 3d, F. J. Kinney, $2; 4th, E. M. Bruce, $1.

Rhode Island Greening:

1st, A. F. Coolidge, $4; 2d, W. P. Hutchinson, $3; 3d, G. V. Fletcher, $2; 4th, A. Frost, $1.

Marshall P. Wilder Fund.

PEARS.—Anjou:

1st, W. Milman, $4; 2d, F. W. Damon, $3; 3d, A. T. Brown, $2; 4th, A. F. Coolidge, $1.

Bartlett:

1st, G. V. Fletcher, $4; 2d, V. Frost, $3; 3d, A. T. Brown, $2.

GRAPES.—Concord, twelve bunches:

1st, H. R. Kinney, $4; 2d, E. A. Adams, $3; 3d, J. S. Chase, $2; 4th, G. V. Fletcher, $1.

Worden:
1st, H. R. Kinney, $4; 2d, J. S. Chase, $3.

Theodore Lyman Fund.

APPLES.—Dutch Codlin:
1st, Mrs. S. A. Nye, $2; 2d, W. Fenno, $1.
Fall Orange or Holden:
1st, C. M. Handley, $3.
Fletcher Russet:
1st, E. R. Teele, $3; 2d, C. M. Handley, $2; 3d, G. V. Fletcher, $1.
Foundling:
1st, C. M. Handley, $4; 2d, E. M. Bruce, $3; 3d, O. B. Hadwen, $2.
Gloria Mundi:
1st, C. D. Eames, $3; 2d, E. M. Bruce, $2.
Golden Russet:
1st, H. R. Kinney, $2.
Lady's Sweet:
2d, W. Fenno, $1.
Maiden's Blush:
1st, H. R. Kinney, $3; 2d, O. B. Hadwen, $2; 3d, W. Fenno, $1.
Mother:
1st, H. R. Kinney, $3; 2d, W. Fenno, $2; 3d, G. C. Rice, $1.
Porter:
1st, A. Frost, $3; 2d, L. F. Cooke, $2; 3d, M. Sullivan, $1.
Pound Sweet:
1st, G. C. Rice, $3; 2d, G. V. Fletcher, $2; 3d, E. M. Bruce, $1.
Sutton:
1st, F. J. Kinney, $3; 2d, D. L. Fiske, $2; 3d, O. B. Hadwen, $1.
Palmer:
1st, E. M. Bruce, $3; 2d, O. B. Hadwen, $2; 3d, G. C. Rice, $1.
Wealthy:
1st, M. Sullivan, $3; 2d, C. M. Handley, $2; 3d, G. C. Rice, $1.
Any other variety:
1st, J. B. Shurtleff, Jr., King, $3; 2d, J. Parker, Belleflower, $2; 3d, M. Martin, King, $1.

Regular Prizes.

PEARS.—Angouleme:
1st, W. H. Derby, $4; 2d, J. L. Bird, $3; 3d, S. Coolidge, $2; 4th, A. T. Brown, $1.
Clairgeau:
1st, W. H. Derby, $3; 2d, C. F. Curtis, $2; 3d, F. W. Damon, $1.
Comice:
1st, A. T. Brown, $3; 2d, J. L. Bird, $2; 3d, W. Fenno, $1.

Dana's Hovey:
1st, A. T. Brown, $4; 2d, W. Milman, $3; 3d, W. Heustis & Son, $2; 4th, F. W. Damon, $1.
Diel:
1st, A. T. Brown, $3; 2d, F. W. Damon, $2; 3d, A. K. Gould, $1.
Fulton:
1st, E. S. Converse, $3; 2d, C. F. Curtis, $2; 3d, W. Fenno, $1.
Hardy:
1st, Mrs. E. M. Gill, $3; 2d, W. Milman, $2; 3d, A. K. Gould, $1.
Howell:
1st, S. Coolidge, $3; 2d, W. Fenno, $2.
Josephine of Malines:
1st, W. Fenno, $3; 2d, J. L. Bird, $2.
Lawrence:
1st, A. T. Brown, $3; 2d, M. W. Chadbourne, $2; 3d, W. Fenno, $1.
Louise Bonne of Jersey:
1st, W. H. Derby, $3; 2d, M. Sullivan, $2; 3d, W. Fenno, $1.
Marie Louise:
1st, E. Torrey, $3; 2d, A. T. Brown, $2; 3d, W. Fenno, $1.
Merriam:
1st, W. Heustis & Son, $3; 2d, F. W. Damon, $2; 3d, W. Fenno, $1.
Onondaga:
1st, J. L. Bird, $3; 2d, C. B. Travis, $2; 3d, W. Fenno, $1.
Seckel:
1st, A. T. Brown, $4; 2d, W. Milman, $3; 3d, M. W. Chadbourne, $2; 4th, D. Perkins, $1.
Sheldon:
1st, E. Torrey, $4; 2d, D. Perkins, $3; 3d, F. W. Damon, $2; 4th, G. F. Wheeler, $1.
Superfin:
1st, W. Fenno, $3; 2d, F. W. Damon, $2.
Urbaniste:
1st, A. T. Brown, $3; 2d, E. S. Converse, $2; 3d, J. L. Bird, $1.
Any other variety:
1st, W. Fenno, Pratt, $3; 2d, J. L. Bird, Kingsessing, $2; 3d, W. Fenno, St. Michael Archangel, $1.

QUINCES.—Champion;
1st, G. V. Fletcher, $3; 2d, J. S. Chase, $2.
Orange:
1st, G. V. Fletcher, $3; 2d, W. Fenno, $2; 3d, J. C. Stone, $1.
Pear:
1st, G. L. Brown, $3.
Rea:
1st, G. V. Fletcher, $3.
Any other variety:
1st, J. S. Chase, $3.

PEACHES.—Crawford's Late:
1st, D. L. Fiske, $3; 2d, C. P. Trowbridge, $2; 3d, S. H. Warren, $1.
Any other variety:
1st, C. F. Fenno, $3; 2d, E. P. Ripley, $2; 3d, G. V. Fletcher, $1.
PLUMS.—Coe's Golden Drop:
1st, C. Scully, $2.
Yellow Egg:
1st, G. V. Fletcher, $2.
Any other variety:
1st, H. R. Kinney, Shipper's Pride, $2; 2d, D. L. Fiske, Satsuma, $1.
NATIVE GRAPES.—Six bunches of Brighton:
1st, C. W. Libby, $3; 2d, E. A. Adams, $2; 3d, J. S. Chase, $1.
Delaware:
1st, J. S. Chase, $4; 2d, W. T. Hutchinson, $3; 3d, W. Fenno, $2; 4th, H. R. Kinney, $1.
Eumelan:
1st, J. S. Chase, $3.
Herbert:
1st, G. W. Jameson, $3; 2d, J. S. Chase, $2; 3d, C. W. Libby, $1.
Iona:
2d, J. S. Chase, $2.
Lindley:
1st, C. W. Libby, $3; 2d, J. S. Chase, $2.
Niagara:
1st, J. S Chase, $3; 2d, E. S. Converse, $2; 3d, E. L. Lewis, $1.
Pocklington:
1st, H. R. Kinney, $4; 2d, J. S. Chase, $3; 3d, F. H. Jackson, $2; 4th, C. W. Libby, $1.
Prentiss:
1st, J. S. Chase, $3.
Wilder:
1st, E. A. Adams, $3.
Any other variety:
1st, J. S. Chase, $3; 2d, G. W. Jameson, $2; 3d, C. W. Libby, $1.
Any variety from girdled vines:
1st, H. R. Kinney, Worden, $3; 2d, H. R. Kinney, Salem, $2; 3d, H. R. Kinney, Concord, $1.
CRANBERRIES.—Half-peck:
1st, C. P. Trowbridge, $3; 2d, L. J. Fosdick, $2; 3d, L. J. Fosdick, $1

Gratuities:—

W. Fenno, Collection of Pears and Apples, $10.
Miss E. J. Clark, Collection of Pears and Apples, $2.
M. W. Chadbourne, Collection, $2.
Mrs. F. L. Ames, Muscat of Alexandria Grapes, a Silver Medal.

CHRYSANTHEMUM SHOW.

NOVEMBER 6, 7, 8 AND 9.

Benjamin V. French Fund.

APPLES.—Baldwin:
1st, M. W. Chadbourne, $3; 2d, Mrs. M. B. Whiting, $2; 3d, G. V. Fletcher, $1.
Rhode Island Greening:
1st, Miss A. Whiting, $3; 2d, A. Frost, $2; 3d, G. V. Fletcher, $1.

Society's Prizes.

APPLES.—Danvers Sweet:
1st, J. K. Manning, $3; 2d, W. Fenno, $2; 3d, B. P. Ware, $1.
Fameuse:
1st, G. V. Fletcher, $3; 2d, M. W. Chadbourne, $2; 3d, G. C. Rice, $1.
Fletcher Russet:
1st, E. R. Teele, $3; 2d, G. V. Fletcher, $2; 3d, W. H. Teele, $1.
Hubbardston:
1st, A. Frost, $3; 2d, F. J. Kinney, $2; 3d, A. T. Leavitt, $1.
Hunt Russet:
1st, W. G. Kendall, $3; 2d, C. F. Boyden, $2.
Jacob's Sweet:
1st, M. Martin, $3; 2d, C. F. Curtis, $2.
Lady's Sweet:
1st, O. B. Wyman, $3; 2d, D. L. Fiske, $2; 3d, F. J. Kinney, $1.
Mackintosh:
1st, F. J. Kinney, $3; 2d, E. M. Bruce, $2; 3d, G. C. Rice, $1.
Northern Spy:
1st, G. V. Fletcher, $3; 2d, O. B. Wyman, $2; 3d, A. E. Hartshorn, $1.
Roxbury Russet:
1st, H. R. Kinney, $3; 2d, W. H. Boyden, $2; 3d, A. E. Hartshorn, $1.
Tolman's Sweet:
1st, G. V. Fletcher, $3; 2d, Mrs. A. E. Underwood, $2; 3d, A. Frost, $1.
Tompkins King:
1st, C. F. Boyden, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, G. C. Rice, $1.
Any other variety:
1st, Mrs. A. E. Underwood, Belleflower, $3; 2d, E. E. Doran, Belleflower, $2; 3d, J. Parker, Belleflower, $1.
PEARS.—Angouleme:
1st, E. Torrey, $4; 2d, F. W. Damon, $3; 3d, J. L. Bird, $2; 4th, W. Fenno, 1$.

Anjou:
1st, W. Milman, $4; 2d, F. W. Damon, $3; 3d, E. S. Converse, $2; 4th, W. Fenno, $1.

Bosc:
1st, A. T. Brown, $4; 2d, G. V. Fletcher, $3; 3d, J. L. Bird, $2; 4th, J. B. Shurtleff, Jr., $1.

Clairgeau:
1st, C. F. Curtis, $3; 2d, W. Fenno, $2; 3d, B. P. Ware, $1

Comice:
1st, A. T. Brown, $4; 2d, J. L. Bird, $3; 3d, W. Fenno, $2; 4th, A. K. Gould, $1.

Dana's Hovey:
1st, A. T. Brown, $4; 2d, W. G. Kendall, $3; 3d, E. W. Howe, $2; 4th, W. Milman, $1.

Diel:
1st, A. K. Gould, $3; 2d, A. T. Brown, $2.

Glout Morceau:
1st, Mrs. A. A. Johnson, $3; 2d, W. Fenno, $2; 3d, E. A. Hall, $1.

Josephine of Malines:
1st, J. L. Bird, $3; 2d, W. Fenno, $2; 3d, J. B. Shurtleff, Jr., $1.

Langelier:
1st, A. T. Brown, $3; 2d, A. K. Gould, $2; 3d, W. Fenno, $1.

Lawrence:
1st, W. Fenno, $3; 2d, M. Sullivan, $2; 3d, J. L. Bird, $1.

Vicar:
1st, J. L. Bird, $3; 2d, A. T Brown, $2; 3d, E. S. Converse, $1.

Winter Nelis:
1st, A. T. Brown, $3; 2d, E. S. Converse, $2; 3d, W. Fenno, $1.

Any other variety:
1st, E. Torrey, Beurré d'Arenberg, $3; 2d, W. Milman, Mt. Vernon, $2; 3d, A. T. Brown, Seckel, $1.

QUINCES.—Any variety:
1st, G. V. Fletcher, Rea, $3; 2d, G. V. Fletcher, Orange, $2; 3d, W. Fenno, Orange, $1.

Gratuity:—

M. W. Chadbourne, Collection, $2.

E. W. WOOD,
CHARLES F. CURTIS,
WARREN FENNO,
J. WILLARD HILL,
GEORGE F. PIERCE,
JOHN L. BIRD,
FREDERICK W. DAMON.

Committee on Fruits.

REPORT

OF THE

COMMITTEE ON VEGETABLES

FOR THE YEAR 1902.

By Warren Howard Heustis, Chairman.

The past season has been unusually favorable for plant growth, and we have to report displays of vegetables far above the average.

At the winter exhibitions there were very full entries in all classes. The tomatoes grown by C. A. Learned were especially noticeable, both for size and quality, and were considered the best shown here for years. The vines on which they were grown were particularly thrifty and the fruit set very low down.

The interest in exhibiting produce is increasing, as the number of exhibitors this year was sixty, against forty competitors last year.

There has been hardly a good specimen of green-flesh melon shown this year, which would lead one to think that this class of fruit must be grown under glass like a cucumber and even then the life of the vine is very short.

There has been a fair showing of salmon-flesh melons and from this we would infer that this melon is not as subject to fungus or insect pests as the green-flesh.

At the September and November shows a silver and a bronze medal were offered for eight roots of celery shown without side branches, which resulted in the exhibition of a remarkably fine lot.

There was enough celery at the November show to extend completely around the small hall. At the Annual Exhibition of Fruits and Vegetables in October, Mr. Simmons, of Rockland, Mass., showed an excellent looking potato which he has called "Simmons' Model" and your committee thought it deserving of a First Class Certificate of Merit.

We hope it will continue to be in its future development as satisfactory as it appears to be at present. We are sorry to know that our appropriation is to be cut down twenty-five per cent as we found it was originally small enough.

We have expended for prizes and gratuities $1156.00, leaving an unexpended balance of $44.00, out of which is to be paid the cost of two silver medals, two bronze medals, and one First Class Certificate of Merit.

PRIZES AND GRATUITIES AWARDED FOR VEGETABLES.

1902.

JANUARY 4.

RADISHES.—Four bunches of any variety:
1st, A. E. Hartshorn, $3.

CUCUMBERS.—Pair of any variety:
1st, W. C. Winter, $3; 2d, Mrs. J. L. Gardner, $2; 3d, E. F. Scolley, $1.

CAULIFLOWERS.—Four specimens:
1st, C. M. Handley, $3.

CELERY.—Four roots of any variety:
1st, A. E. Hartshorn, Boston Market, $3; 2d, W. Heustis & Son, Boston Market, $2; 3d, W. Heustis & Son, Giant Pascal, $1.

LETTUCE.—Four heads of Tennisball:
2d, A. E. Hartshorn, $2; 3d, W. J. Clemson, $1.

PARSLEY.—Two quarts:
1st, W. J. Clemson, Chappell's, $2; 2d, W. J. Clemson, Champion, $1.

MUSHROOMS.—Twenty-four specimens:
1st, W. C. Winter, $3; 2d, H. R. Kinney, $2.

TOMATOES.—Twelve specimens:
1st, C. A. Learned, $3; 2d, W. C. Winter, $2; 3d, W. C. Winter, $1.

Gratuities:—

E. L. Lewis, Collection, $3.
A. E. Hartshorn, " $2.
W. Heustis & Son, " $1.
A. Low, " $1.

FEBRUARY 8.

RADISHES.—Four bunches of any variety:
1st, A. E. Hartshorn, $3.
SALSIFY.—Twelve specimens:
1st, V. Frost, $3.
CUCUMBERS.—Pair of any variety:
1st, W. C. Winter, $3.
CELERY.—Four roots of any variety:
1st, W. Heustis & Son, Pascal, $3; 2d, A. E. Hartshorn, Paris Golden, $2; 3d, W. Heustis & Son, Boston Market, $1.
DANDELIONS.—Peck:
1st, A. E. Hartshorn, $3.
LETTUCE.—Four heads of Tennisball:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2.
RHUBARB.—Twelve stalks:
1st, F. Wheeler, $3; 2d, C. F. Smith, $2.
TOMATOES.—Twelve specimens;
1st, C. A. Learned, $3; 2d, W. C. Winter, $2; 3d, W. C. Winter, $1.

Gratuity:—

A. E. Hartshorn, Collection, $2.

MARCH 8.

Gratuity:—

G. D. Moore, Lettuce, $1.

SPRING EXHIBITION.

MARCH 19, 20, 21, 22 AND 23.

William J. Walker Fund.

RADISHES.—Four bunches of Turnip Rooted:
1st, W. W. Rawson, $2; 2d, A. E. Hartshorn, $1.

CUCUMBERS.—Pair of White Spine:
1st, W. W. Rawson, $3.
DANDELIONS.—Peck:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Four heads of Tennisball:
1st, Wyman Bros., $3; 2d, W. W. Rawson, $2; 3d, J. C. Stone, $1.
WATER CRESS.—Two quarts:
1st, A. E. Hartshorn, $2; 2d, B. P. Ware, $1.
PARSLEY.—Two quarts:
1st, W. J. Clemson, $2; 2d, J. C. Stone, $1.
MUSHROOMS.—Twenty-four specimens:
1st, Wyman Bros., $3; 2d, H. R. Kinney, $2; 3d, H. R. Kinney, $1.
RHUBARB.—Twelve stalks:
1st, F. Wheeler, $3; 2d, Wyman Bros., $2; 3d, W. H. Derby, $1.
TOMATOES.—Twelve specimens:
1st, W. C. Winter, $3; 2d, W. C. Winter, $2.

Gratuities:—

E. S. Converse, Beans, $1.
M. W. Chadbourne, Artichokes, $1.
A. E. Hartshorn, Collection, $3.
W. Heustis & Son, " $2.
G. D. Moore, " $1.
W. W. Rawson, " $1.
H. E. Rich, " $1.

APRIL 5.

BEETS.—Twelve specimens of Turnip Rooted
1st, W. Warburton, $3; 2d, A. Nixon, $2; 3d, A. Low, $1.
PARSNIPS.—Twelve specimens:
1st, A. Nixon, $3; 2d, W. Warburton, $2; 3d, J. Nuttall, $1.
RADISHES.—Four bunches:
1st, A. Nixon, $2; 2d, A. E. Hartshorn, $1.
LETTUCE.—Four heads:
1st, A. E. Hartshorn, $3; 2d, G. D. Moore, $2; 3d, H. R. Kinney, $1.
CUCUMBERS.—Pair of White Spine:
1st, W. C. Winter, $3.

Gratuities:—

A. E. Hartshorn, Collection, $2.
A. Low, " $1.

MAY 10.

William J. Walker Fund.

ASPARAGUS.—Four bunches of twelve stalks each:
1st, W. H. Hunt, $3; 2d, W. J. Clemson, $2; 3d, A. E. Hartshorn, $1.
CUCUMBERS.—Pair of White Spine:
1st, E. M. Bruce, $3; 2d, W. C. Winter $2.
Any other variety:
1st, E. M. Bruce, $3; 2d, E. M. Bruce, $2; 3d, E. M. Bruce, $1.
SPINACH.—Peck.
1st, A. Low, $3; 2d, G. D. Moore, $2; 3d, A E. Hartshorn, $1.
DANDELIONS.—Peck.
1st, J. C. Stone, $3; 2d, W. Heustis & Son, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Four heads:
1st, W. Warburton, $3; 2d, J. C. Stone, $2.
RHUBARB —Twelve stalks:
1st, W. Heustis & Son, $3; 2d, W. J. Clemson, $2; 3d, A. Low, $1.
TOMATOES.—Twelve specimens:
1st, W. J. Clemson, $3; 2d, W. C. Winter, $2; 3d, A. Low, $1.

Gratuities:—

A. E. Hartshorn,	Collection,	$2.
W. J. Clemson,	"	$1.
W. Heustis & Son,	"	$1.
A. Low,	"	$1.
G. D. Moore,	"	$1.
J. C. Stone,	"	$1.
W. C. Winter,	"	$1.

RHODODENDRON EXHIBITION.

JUNE 7. (*Changed from June 6, 7 and 8.*)

Theodore Lyman Fund.

BEETS.—Twelve specimens:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2.
CARROTS.—Twelve specimens:
1st, W. J. Clemson, Short Horn, $3; 2d, W. J. Clemson, Early Forcing, $2; 3d, A. E. Hartshorn, Early Forcing, $1.
RADISHES.—Four bunches of Turnip Rooted:
1st, W J. Clemson, $2; 2d, A. E. Hartshorn, $1.

ASPARAGUS.—Four bunches:
1st, W. H. Hunt, $3.
CUCUMBERS.—Pair:
1st, G. D. Moore, $3; 2d, V. Frost, $2; 3d, J. C. Stone, $1.
LETTUCE.—Four heads of any variety:
1st, W. Heustis & Son, Big Boston, $3; 2d, W. Heustis & Son, Tennisball, $2; 3d, V. Frost, Big Boston, $1.
RHUBARB.—Twelve stalks:
1st, W. J. Clemson, $3; 2d, W. Heustis & Son, $2; 3d, G. D. Moore, $1.
MUSHROOMS.—Twenty-four specimens:
1st, W. C. Winter, $3; 2d, A. J. Edwards, $2.

Gratuities:—

W. J. Clemson, Collection, $3.
A. E. Hartshorn, " $2.
G. D. Moore, " $2.
W. Warburton, " $2.
A. Low, " $1.

JUNE 14.

Gratuities:—

W. H. Hunt, Asparagus, $1.
A. E. Hartshorn, Collection, $2.
W. Heustis & Son, " $1.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 19 AND 20. (*Changed from June 24 and 25.*)

BEETS.—Twelve specimens of Summer Turnip Rooted:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.
ONIONS.—Twelve specimens:
1st, A. E. Hartshorn, $3; 2d, T. Valentine, $2; 3d, W. J. Clemson, $1.
CUCUMBERS.—Pair of White Spine:
1st, V. Frost, $3; 2d, G. D. Moore, $2; 3d, A. E. Hartshorn, $1.
Any other variety:
1st, N. T. Kidder, $3; 2d, A. E. Hartshorn, $2.
CABBAGES.—Three of any variety, trimmed:
1st, G. D. Moore, Early Spring, $3; 2d, G. D. Moore, Wakefield, $2.

LETTUCE.—Four heads of Tennisball:
1st, W. Heustis & Son, $3; 2d, T. Valentine, $2; 3d, A. E. Hartshorn, $1.
Any other variety:
1st, E. L. Lewis, Defiance, $3; 2d, E. L. Lewis, Deacon, $2; 3d, E. L. Lewis, Immensity, $1.
PEAS.—Half-peck of any variety:
1st, W. J. Clemson, Gradus, $3; 2d, A. E. Hartshorn, Gradus, $2; 3d, P. B. Bradley, Gradus, $1.
Gratuities:—
W. H. Hunt, Asparagus, $1.
N. T. Kidder, Cauliflowers, $2.
E. S. Converse, Tomatoes, $1.
G. D. Moore, Collection, $3.
A. E. Hartshorn, " $2
W. Heustis & Son, " $2.
E. L. Lewis, " $2.

JULY 5. (*Changed from July 12.*)

POTATOES.—Twelve specimens:
1st, E. L. Lewis, Hebron, $3; 2d, E. L. Lewis, Early Rose, $2; 3d, W. J. Clemson, Early Rose, $1.
ONIONS.—Twelve specimens:
1st, A. E. Hartshorn, $2; 2d, E. L. Lewis, $1.
SQUASHES.—Four specimens of Long Warted:
1st, J. C. Stone, $3.
Scalloped:
1st, J. C. Stone, $3.
CABBAGES.—Three of any variety, trimmed:
1st, G. D. Moore, Succession, $3; 2d, W. Heustis & Son, Early Spring, $2; 3d, G. D. Moore, Early, Spring, $1.
BEANS.—Half-peck of Wax:
1st, J. C. Stone, $3; 2d, G. D. Moore, $2; 3d, E. L. Lewis, $1.
Any other variety:
1st, G. D. Moore, $3.
PEAS.—Half-peck of American Wonder:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2.
Half-peck of Advancer:
1st, A. E. Hartshorn, $3; 2d, Mrs. E. M. Gill, $2.
Half-peck of any other variety.
1st, A. E. Hartshorn, $3; 2d, A. Low, $2; 3d, F. Tetlow, $1.

Gratuities:—

W. Heustis & Son, Collection, $3.
E. L. Lewis, " $3.
W. J. Clemson, " $2.
G. D. Moore, " $2.
A. Low, " $1.

JULY 12. (*Changed from July 19.*)

Levi Whitcomb Fund.

POTATOES.—Twelve specimens:
1st, E. L. Lewis, Early Rose, $3; 2d, W. J. Clemson, Early Rose, $2; 3d, F. J. Kinney, Hebron, $1.
CABBAGES.—Three Drumhead, trimmed:
1st, G. D. Moore, $3; 2d, W. Heustis & Son, $2; 3d, G. D. Moore, $1.
LETTUCE.—Four heads:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.
BEANS.—Half-peck of Wax:
1st, E. L. Lewis, $3; 2d, G. D. Moore, $2; 3d, A. E. Hartshorn, $1.
Half-peck of any green variety:
1st, J. C. Stone, $3; 2d, G. D. Moore, $2; 3d, A. E. Hartshorn, $1.
SQUASHES.—Four specimens of Long Warted:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, H. Leavitt, $1.
Four specimens of White Scalloped:
1st, J. C. Stone, $3; 2d, W. Heustis & Son, $2.

Gratuities:—

E. L. Lewis, Collection, $3.
W. J. Clemson, " $2.
W. Warburton, " $2.
Mrs. E. M. Gill, " $1.
W. Heustis & Son, " $1.
H. Leavitt, " $1.
G. D. Moore, " $1.

JULY 19. (*Changed from July 26.*)

POTATOES.—Twelve specimens:
1st, E. L. Lewis, Hebron, $3; 2d, E. L. Lewis, Early Rose, $2; 3d, W. J. Clemson, Early Rose, $1.
LETTUCE.—Four heads of Tennisball:
1st, W. Heustis & Son, $2.
Any other variety:
1st, H. R. Kinney, Wonderful, $3; 2d, E. L. Lewis, Deacon, $2.

PEAS.—Half-peck of Stratagem:
1st, A. Nixon, $3.
Any other variety:
1st, H. R. Kinney, Champion, $3; 2d, J. Thorpe, Carter's Daisy, $2; 3d, A. E. Hartshorn, Telephone, $1.
SWEET CORN.—Twelve ears:
1st, G. D. Moore, Farquhar's Early, $3; 2d, J. C. Stone, Cory, $2.
TOMATOES.—Open culture, twelve specimens:
1st, A. E. Hartshorn, Acme, $3; 2d, G. D. Moore, Earliana, $2; 3d, J. C. Stone, Atlantic, $1.

Gratuities:—

W. J. Clemson, Collection, $2.
W. Heustis & Son, " $2.
E. L. Lewis, " $2.
A. Nixon, " $2.
J. Thorpe, " $2.
W. Warburton, " $2.
A. E. Hartshorn, " $1.

JULY 26. (*Changed from August 2.*)

POTATOES.—Twelve specimens:
1st. E. L. Lewis, Early Rose, $3; 2d, W. J. Clemson, Early Rose, $2; 3d, J. W. Burns, Early Northern, $1.
SQUASHES.—Three specimens of Marrow:
1st, J. C. Stone, $3; 2d, T. Valentine, $2.
SWEET CORN.—Twelve ears of Crosby:
1st, G. D. Moore, $3; 2d, J. C. Stone, $2.
Any other variety:
1st, G. D. Moore, Potter's Excelsior, $3; 2d, G. D. Moore, Cory, $2; 3d, J. C. Stone, Cory, $1.
TOMATOES.—Twelve specimens:
1st, W. C. Winter, May's Favorite, $3; 2d, W. Warburton, Dwarf Champion, $2; 3d, A. E. Hartshorn, Acme, $1.
NATIVE MUSHROOMS.—Named collection of not less than five edible varieties:
1st, Mrs. Grinnell, $4; 2d, Mrs. S. C. Pierce, $3.

Gratuities:—

W. J. Clemson, Collection, $1.
E. L. Lewis, " $1.
W Warburton, " $1.

AUGUST 2. (*Changed from August 9.*)

BEETS.—Twelve specimens:
1st, G. D. Moore, $3; 2d, W. J. Clemson, $2; 3d, E. L. Lewis, $1.
TURNIPS.—Twelve specimens:
1st, E. L. Lewis, $2.
CABBAGES.—Three specimens:
1st, W. Heustis & Son, Succession, $3; 2d, W. Heustis & Son, No. 2, $2; 3d, A. E. Hartshorn, $1.
BEANS.—Two quarts of Goddard, shelled:
1st, J. Thorpe, $3.
Two quarts of Horticultural, shelled:
1st, A. E. Hartshorn, $3; 2d, J. Thorpe, $2.
TOMATOES.—Twelve specimens:
1st, V. Frost, Belmont, $3; 2d, J. Thorpe, Matchless, $2; 3d, J. Thorpe, Dwarf Aristocrat, $1.
SQUASHES.—Three specimens of Marrow:
1st, J. C. Stone, $3.

Gratuity:—

W. J. Clemson, Collection, $1.

AUGUST 9. (*Changed from August 16.*)

CARROTS.—Twelve specimens:
1st, W. J. Clemson, $3; 2d, E. L. Lewis, $2; 3d, A. Nixon, $1.
SALMON FLESH MELONS.—Four specimens:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2.
SWEET CORN.—Twelve ears:
1st, W. J. Clemson, $3; 2d, J. C. Stone, $2; 3d, E. L. Lewis, $1.
TOMATOES.—Twelve specimens:
1st, V. Frost, $3; 2d, A. F. Coolidge, $2; 3d, J. C. Stone, $1.
EGG PLANT.—Four specimens of Round Purple:
1st, A. F. Coolidge, $3.

Gratuity:—

E. L. Lewis, Collection, $1.

AUGUST 16. (*Changed from August 23.*)

POTATOES.—Twelve specimens:
1st, E. L. Lewis, Clark's No. 1, $3; 2d, E. L. Lewis, Early Rose, $2; 3d, J. W. Burns, $1.

ONIONS.—Twelve specimens:
1st, A. F. Coolidge, $3; 2d, E. L. Lewis, $2; 3d, T. Valentine, $1.
SALMON FLESH MELONS.—Any variety, four specimens:
2d, G. D. Moore, $2.
CELERY.—Four roots of any variety:
1st, A. F. Coolidge, $3; 2d, F. Tetlow, $2; 3d, J. Thorpe, $1.
BEANS.—Two quarts of Goddard, shelled:
1st, A. E. Hartshorn, $3; 2d, J. Thorpe, $2; 3d, J. W. Burns, $1.
SWEET CORN.—Twelve ears of any variety other than Potter's Excelsior:
1st, J. C. Stone, $3; 2d, E. L. Lewis, $2; 3d, J. Thorpe, $1.
TOMATOES.—Twelve specimens:
1st, A. F. Coolidge, Stone, $3; 2d, A. F. Coolidge, Belmont, $2; 3d, W. Heustis & Son, Belmont, $1.
PEPPERS.—Twelve specimens of Squash:
1st, A. Low, $3; 2d, A. Low, $2; 3d, W. Warburton, $1.
Any other variety:
1st, E. L. Lewis, $3; 2d, W. Warburton, $2; 3d, A. E. Hartshorn, $1.

Gratuities:—

W. J. Clemson, Collection, $2.
W. Heustis & Son, " $1.
A. Low, " $1.
T. Valentine, " $1.

AUGUST 23. (*Changed from August 30.*)

BEETS.—Twelve specimens:
1st, W. Warburton, $3; 2d, E. L. Lewis, $2; 3d, E. L. Lewis, $1.
GREEN FLESH MELONS.—Four specimens:
1st, A. E. Hartshorn, $3.
SALMON FLESH MELONS.—Four specimens:
1st, V. Frost, $3; 2d, A. E. Hartshorn, $2.
WATERMELONS.—Pair:
3d, J. Thorpe, $1.
CAULIFLOWERS.—Four specimens:
1st, DeSouza Bros., $3; 2d, C. M. Handley, $2; 3d, W. H. Teele, $1.
CELERY.—Four roots:
1st, F. Tetlow, $3; 2d, A. F. Coolidge, $2; 3d, A. E. Hartshorn, $1.
MARTYNIAS.—Twelve specimens:
1st, E. L. Lewis, $2; 2d, E. S. Converse, $1.
NATIVE MUSHROOMS.—Named collection of not less than five edible varieties:
1st, Mrs. Grinnell, $3; 2d, Boston Mycological Club, $2.

Gratuities:—

W. Heustis & Son, Collection, $1.
A. Low, " $1.
J. B. Shurtleff, Jr., " $1.
W. Warburton, " $1.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 11, 12, 13 AND 14.

Special Prizes.

CELERY.—Eight roots without side branches:
1st, A. Nixon, A Silver Medal; 2d, V. Frost, A Bronze Medal.

Regular Prizes.

BEETS.—Twelve specimens:
1st, G. D. Moore, $3; 2d, W. Warburton, $2; 3d, W. Warburton, $1.
PARSNIPS.—Twelve specimens:
1st, W. Heustis & Son, $3; 2d, G. D. Moore, $2; 3d, E. L. Lewis, $1.
SALSIFY.—Twelve specimens:
1st, G. D. Moore, $3; 2d, V. Frost, $2; 3d, W. Heustis & Son, $1.
TURNIPS.—Twelve specimens of Flat:
1st, G. F. Wheeler, $3; 2d, W. Wheeler, $2; 3d, E. L. Lewis, $1.
SALMON FLESH MELONS.—Four specimens:
1st, J. A. Beebe, $3; 2d, J. C. Stone, $2.
WATERMELONS.—Pair:
1st, J. Thorpe, $3; 2d, E. L. Lewis, $2; 3d, J. Thorpe, $1.
CABBAGES.—Three specimens, any variety:
1st, A. Low, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.
CAULIFLOWERS.—Four specimens:
1st, C. M. Handley, $3; 2d, W. H. Teele, $2; 3d, E. R. Teele, $1.
LETTUCE.—Four heads of any variety:
1st, E. L. Lewis, Deacon, $3; 2d, E. L. Lewis, Defiance, $2; 3d, E. L. Lewis, Immensity, $1.
CELERY.—Four roots of any variety:
1st, A. Nixon, $3; 2d, A. F. Coolidge, $2; 3d, G. D. Moore, $1.
PARSLEY.—Two quarts:
1st, A. E. Hartshorn, $2; 2d, W. Warburton, $1.
BEANS.—Two quarts of Lima:
1st, Mrs. E. M. Gill, $3; 2d, V. Frost, $2; 3d, E. L. Lewis, $1.
SWEET CORN.—Twelve ears of any variety:
1st, A. F. Coolidge, $3; 2d, G. F. Wheeler, $2; 3d, E. L. Lewis, $1.

EGG PLANT.—Four specimens of Round Purple:
1st, A. F. Coolidge, $3; 2d, E. L. Lewis, $2.
TOMATOES.—Twelve specimens of Aristocrat:
1st, V. Frost, $3; 2d, W. Heustis & Son, $2; 3d, A. Low, $1.
Comrade:
1st, A. F. Coolidge, $3; 2d, W. Heustis & Son, $2; 3d, A. Low, $1.
May's Favorite:
1st, A. F. Coolidge, $3; 2d, A. Low, $2; 3d, J. Thorpe, $1.
Any other variety:
1st, E. L. Lewis, Success, $3; 2d, E. L. Lewis, Stone, $2; 3d, W. R. Schaefer, New Imperial, $1.
MARTYNIAS.—Twelve specimens:
1st, A. Low, $2; 2d, E. S. Converse, $1.
PEPPERS.—Twelve specimens of Squash:
1st, A. Low, $2; 2d, L. Doran, $1.
Any other variety:
1st, E. L. Lewis, $2; 2d, W. Warburton, $1.

Gratuities:—

W. Heustis & Son,	Collection,	$5.
E. L. Lewis,	"	$5.
A. Low,	"	$4.
A. Nixon,	"	$3.
W. Warburton,	"	$3.
G. D. Moore,	"	$2.
C. W. Parker,	"	$1.
J. C. Stone,	"	$1.

OCTOBER EXHIBITION OF FRUITS AND VEGETABLES.

OCTOBER 3 AND 4.

CARROTS.—Twelve specimens of Long Orange:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, C. Scully, $1.
Twelve specimens of Intermediate:
1st, H. R. Kinney, $3; 2d, H. W. Anderson, $2; 3d, W. Warburton, $1.
POTATOES.—Twelve specimens of Carman, No. 1.
1st, E. L. Lewis, $3; 2d, H. W. Anderson, $2; 3d, G. F. Wheeler, $1.
Early Fortune:
1st, H. W. Anderson, $3; 2d, A. Low, $2; 3d, E. M. Bruce, $1.
Hebron:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, C. Pfaff, $1.
Early Rose:
1st, H. R. Kinney, $3; 2d, A. Low, $2; 3d, E. L. Lewis, $1.

Any other variety:

1st, E. A. Adams, New Queen, $3; 2d, H. R. Kinney, Walter Raleigh, $2; 3d, H. R. Kinney, American Wonder, $1.

SALSIFY.—Twelve specimens:

1st, G. D. Moore, $3; 2d, V. Frost, $2; 3d, W. Heustis & Son, $1.

TURNIPS.—Twelve specimens of Flat:

1st, F. J. Kinney, $3; 2d, G. F. Wheeler, $2; 3d, G. F. Wheeler, $1.

Twelve specimens of Swedish:

1st, DeSouza Bros., $3; 2d, E. L. Lewis, $2.

ONIONS.—Twelve specimens of Danvers:

1st, W. H. Derby, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, C. Pfaff, $1.

Red:

1st, C. Pfaff, $3; 2d, DeSouza Bros., $2; 3d, E. M. Bruce, $1.

White:

1st, A. E. Hartshorn, $2; 2d, E. L Lewis, $1.

Any other variety:

1st, E. M. Bruce, $3; 2d, A. Nixon, $2; 3d, A. E. Hartshorn, $1.

SQUASHES.—Three specimens of Bay State:

1st, W. Wheeler, $3; 2d, G. F. Wheeler, $2; 3d, A. E. Hartshorn, $1.

Hubbard:

1st, A. E. Hartshorn, $3; 2d, J. C. Stone, $2; 3d, G. F. Wheeler, $1.

Hybrid Turban:

1st, G. F. Wheeler, $3; 2d, A. Low, $2; 3d, E. L. Lewis, $1.

Marrow:

1st, E. L. Lewis, $3; 2d, V. Frost, $2; 3d, J. C. Stone, $1.

Any other variety:

1st, J. Thorpe, Marblehead, $3; 2d, A. E. Hartshorn, Golden Hubbard, $2; 3d, F. J. Kinney, Golden Hubbard, $1.

CUCUMBERS.—Pair of White Spine:

1st, G. D. Moore, $3; 2d, W. H. Burpee, $2.

GREEN FLESH OR SALMON FLESH MELONS.—Four specimens:

1st, A. E. Hartshorn, $3; 2d, A. E. Hartshorn, $2; 3d, A. E. Hartshorn, $1.

WATERMELONS.—Pair:

1st, J. Thorpe, $3; 2d, J. Thorpe, $2; 3d, E. L. Lewis, $1.

BRUSSELS SPROUTS.—Half-peck:

1st, A. E. Hartshorn, $3; 2d, A. E. Hartshorn, $2.

CABBAGES.—Three specimens of Drumhead, trimmed:

1st, E. Parker, $3; 2d, W. Warburton, $2; 3d, E. R. Teele, $1.

Savoy:

1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, E. L. Lewis, $1.

CAULIFLOWERS.—Four specimens:

1st, E. R. Teele, $4; 2d, W. H. Teele, $3; 3d, C. M. Handley, $2.

CELERY.—Best kept during the exhibition, four roots of Paris Golden:

1st, A. Nixon, $4; 2d, A. F. Coolidge, $3; 3d, W. Heustis & Son, $2.

Any other variety:
1st, A. Nixon, $4; 2d, W. Warburton, $3.

ENDIVE.—Four specimens:
1st, A. E. Hartshorn, $3; 2d, A. Nixon, $2; 3d, E. L. Lewis, $1.

LETTUCE.—Four heads:
1st, W. Warburton, $3; 2d, A. E. Hartshorn, $2; 3d, A. Nixon, $1.

PARSLEY.—Two quarts:
1st, W. Warburton, $2; 2d, C. Pfaff, $1.

SWEET CORN.—Twelve ears:
1st, A. E. Hartshorn, $3; 2d, O. R. Robbins, $2; 3d, H. W. Anderson, $1.

EGG PLANT.—Four specimens of Round Purple:
1st, A. F. Coolidge, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.

TOMATOES.—Twelve specimens of Aristocrat:
1st, V. Frost, $3; 2d, A. F. Coolidge, $2; 3d, A. Nixon, $1.

May's Favorite:
1st, A. F. Coolidge, $3; 2d, C. Pfaff, $2; 3d, A. Low, $1.

Stone:
1st, J. Thorpe, $3; 2d, A. F. Coolidge, $2; 3d, A. Nixon, $1.

Any other variety:
1st, A. F. Coolidge, $3; 2d, J. Thorpe, $2: 3d, A. Low, $1.

PEPPERS.—Twelve specimens of Squash:
1st, A. Low, $3; 2d, A. Low, $2; 3d, A. Nixon, $1.

Any other variety:
1st, E. L. Lewis, Chinese Giant, $3; 2d, A. Low, Chinese Giant, $2; 3d, W. Warburton, Ruby King, $1.

CULINARY HERBS, GREEN.—Collection, named:
1st, W. Warburton, $5; 2d, A. Nixon, $4.

Gratuities:—

W. Heustis & Son, Collection, $5.
E. L. Lewis, " $5.
A. F. Coolidge, " $3.
A. Low, " $3.
C. W. Parker, " $3.
Goodell Farm, " $2.
G. D. Moore, " $2.
Mrs. E. M. Gill, " $1.
N. W. T. Knott, " $1.
W. Wheeler, " $1.
Mr. Simmons, New Seedling Potato, Simmons' Model, First Class Certificate of Merit.

CHRYSANTHEMUM SHOW.

NOVEMBER 6, 7, 8 AND 9

Special Prizes.

CELERY.—Eight roots, commercial grown:
1st, A. Nixon, A Silver Medal; 2d, W. Heustis & Son, A Bronze Medal.

Regular Prizes.

PARSNIPS.—Twelve specimens of Long Smooth:
1st, W. Heustis & Son, $3; 2d, H. R. Kinney, $2; 3d, A. E. Hartshorn, $1.
Hollow Crown:
1st, W. Warburton, $3; 2d, A. E. Hartshorn, $2; 3d, H. R. Kinney, $1.

SALSIFY.—Twelve specimens:
1st, V. Frost, $3; 2d, J. C. Stone, $2; 3d, W. Heustis & Son, $1.

CUCUMBERS.—Pair:
1st, W. C. Winter, $3.

CABBAGES.—Three Red, trimmed:
1st, E. L. Lewis, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.
Savoy:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2.

BRUSSELS SPROUTS.—Half-peck:
1st, A. E. Hartshorn, $3; 2d, A. E. Hartshorn, $2; 3d, G. F. Pierce, $1.

CAULIFLOWERS.—Four specimens:
1st, W. H. Teele, $3; 2d, E. R. Teele, $2; 3d, C. M. Handley, $1.

CELERY.—Four roots:
1st, W. H. Heustis & Son, $3; 2d, A. Nixon, $2; 3d, W. Warburton, $1.

ENDIVE.—Four specimens:
1st, A. Nixon, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.

LETTUCE.—Four heads:
1st, G. D. Moore, $3; 2d, A. F. Coolidge, $2; 3d, J. C. Stone, $1.

CORN.—Yellow or field, twenty-five ears, traced:
1st, Goodell Farm, $3; 2d, C. Scully, $2; 3d, E. M. Bruce, $1.

TOMATOES.—Twelve specimens, grown under glass:
1st, Mrs. F. L. Ames, $3; 2d, Mrs. F. L. Ames, $2.

Gratuities:—

A. Low, Turnips, $1.
Mrs. J. Lewis, Onions, $1.
N. T. Kidder, Scotch Kale, $1.
W. Heustis & Son, Collection, $3.
A. E. Hartshorn, " $2.
G. D. Moore, " $2.
W. Warburton, " $2.
N. W. T. Knott, " $1.

WARREN HOWARD HEUSTIS,
VARNUM FROST,
WALTER RUSSELL,
AARON LOW,
GEORGE D. MOORE,
JOSHUA C. STONE,
MICHAEL SULLIVAN.

Committee on Vegetables.

Patten & Co.'s Carnation House, Tewksbury, Mass.

REPORT

OF THE

COMMITTEE ON GARDENS.

FOR THE YEAR 1902.

By PATRICK NORTON, CHAIRMAN.

The past year has been full of activity for this committee and we are very much pleased to observe more care manifested in all the departments of the horticulture we have been called upon to inspect.

The season has been quite remarkable for its coolness, yet vegetation was more than a week in advance of last year, making a change necessary to an earlier date of some of the exhibitions.

PATTEN & CO.'S CARNATION HOUSE, TEWKSBURY.

The first place that we were called upon to visit was the Messrs. Patten & Co.'s house of carnations at Tewksbury, on February 13.

The house was two hundred and fifty feet long by twenty-one feet wide and was filled with the very best plants to be had, splendidly grown and profusely bloomed.

We noticed some very fine seedlings of their own production and their ambition seems to be to cultivate only the best kinds whether originated by others or by themselves.

The house was in fine order, the plants very vigorous and splendidly flowered on very long stems. Their method of growing carnations is to be commended. At our request Mr. M. A. Patten has kindly furnished the following notes on the subject.

PATRICK NORTON, ESQ., *Chairman Committee on Gardens.*

DEAR SIR:—To write upon the subject "How we grow Carnations" seems superfluous, after the quantity of carnation literature imposed on the gardening fraternity the past few years.

Our method is practically the same as used by most growers.

In January, February, or March, healthy side shoots on the flowering stem are rooted in a temperature of 50 degrees overhead and about 10 degrees more in the sand, and when rooted we put them in small pots, and repot into a larger size when necessary.

Some are kept to plant on the benches for inside growing. The rest are planted out the last of May on land that has been well manured and well worked over, in rows about eighteen inches apart, eight to ten inches in the row, according as the variety is a large or small grower. A sprinkling of bone is a good tonic. Keep the weeds down and cultivate once a week. Top the plants when the flower shoots begin to push up. Inside culture is practically the same—good ventilation and plenty of spraying, to keep down the red spider.

In August we plant the outside grown carnations in the greenhouse, shading if necessary a few days. They should be supported as soon as planted to keep them from falling over when syringing. Give them all the air they will stand. After they are well established we discontinue watering overhead. Disbudding should be attended to as the plants grow. Night temperature should be fifty to fifty-five degrees, according to the variety and the day temperature about fifteen degrees higher.

Our flowers are cut the day before shipment and placed in a cool room.

The houses are fumigated every week or ten days, for which we prefer aphis punk.

M. A. PATTEN.

TEWKSBURY, MASS.
March 13, 1903.

MRS. DAVID NEVINS' ESTATE, METHUEN.

On May 28 we visited the residence of Mrs. David Nevins at Methuen. The old homestead had been reconstructed and we

were received into what appeared to be a new house with all the modern conveniences. The grounds about the house were made beautiful by the grouping of handsome shrubbery and flowering plants and the general aspect of the place reflected good taste in the arrangements of a very comfortable home. Mrs. Nevins, being a very active woman, is constantly improving her estate by bringing yearly large parcels of realty under more intense cultivation than it ever had previously, thus expanding her domain and at the same time beautifying the town.

George D. Moore's Cucumber House and Vegetable Garden, Arlington.

The next visit was on June 18 to George D. Moore's at Arlington to inspect a house of cucumbers and a vegetable garden.

It was evident that Mr. Moore and his son keep up their reputation in growing vegetables whether under glass or in the open ground, for the results of good cultivation were evident to the most casual observer. The liberal use of fertilizers and the knowledge of how and when to apply them were manifest in the copious crops displayed on this occasion. The Moore's method of cultivation is to be commended. His system of driven wells is a complete success, giving him all the water for irrigation and other purposes he can consume.

Hon. E. S. Converse's Estate, Malden.

The fourth visit was to the fine old estate of the Hon. E. S. Converse at Malden on July 16, to inspect a house of grapes as grown by D. F. Roy, head gardener. The house contained sixteen vines each bearing from twelve to fifteen bunches of grapes. The vines are now ten years old and Mr. Roy's method of renewal is to take up a new shoot from near the base of the old vine and when large enough to "go alone," cut away the old vine. This will give him in a short time new young vines throughout the house.

The whole estate is in a very satisfactory condition forming a connecting link between the old style gardening and the new. The old-fashioned plants which have become endeared to their

owners by many years of association are judiciously planted with the newer developments in horticulture and they make the combination very pleasing.

Greycourt, the Estate of Charles H. Tenney, Methuen.

The fifth visit this year was on June 27 to Greycourt, the beautiful estate of Mr. Charles H. Tenney at Methuen. The elegance of this estate might be taken as a model for any gentleman about to make a home for himself. It comprises every convenience and luxury that can be incorporated into any estate and these comforts are so judiciously planned as to make the place "a thing of beauty and a joy forever." Our visit this spring was more particularly to see the unfolding of the trees after their winter's sleep. Nothing could be more beautiful to the lover of nature than the new growth on all the rare shrubs, trees and conifers. The blue spruces and firs were wonderfully handsome in their new clothes and excited praise from all who had the pleasure of viewing them.

Mr. Tenney's object seems to have been, in building so beautiful an estate, to give himself the satisfaction of owning a "paradise on earth" to which he can invite his friends to enjoy with him every luxury, both within doors and without, which money can buy. It is so beautifully arranged as to be commended by all who visit Greycourt. This estate is entered for the Hunnewell Triennial Premiums.

Miss E. Jackson Clark's Estate, Pomfret, Conn.

The sixth visit this year occurred on July 23, to La Plaisance, the estate of Miss E. Jackson Clark at Pomfret, Connecticut, to inspect houses of grapes and fruits as grown by John Ash, the superintendent of the estate.

The grape house contains eighteen vines of five varieties, remarkably well fruited, with bunches averaging about four pounds each, highly colored, and luscious to the taste. The estate comprises about eighty acres, sixty acres of which are used for farming and garden purposes, while about twenty acres adjoining the mansion

house are used for lawn and ornamental planting of rare trees and shrubs. The fruit house contains peaches and nectarines of no less than seven different varieties of the best of these luscious fruits. Other glass structures are devoted to growing melons, tomatoes, cucumbers, and ornamental plants, including sixteen hundred chrysanthemums. The estate is replete with everything to make it a desirable and sumptuous home. Mr. Ash furnished this committee with a letter which is appended hereto, showing his method of procedure in growing such fine grapes; also a photograph showing the results attained; all of which we submit to other growers for their perusal and observation.

THE CULTURE OF HOT HOUSE GRAPES BY JOHN ASH.

I enclose photograph of part of my house of grapes entered for competition. The dimensions of house are as follows:—Thirty-three feet long by twenty-five feet wide; roof curvilinear. In it I have planted four vines of Muscat of Alexandria, four of Gros Maroc, two of Lady Downs, four of Gros Guillaume, and four of Black Alicante. The house was built and one year old vines planted in 1897, so that my vines are now six years old and they have been fruited four years. The border is an inside one, so that I have absolute control of giving freely or withholding water as the vines may require.

This house is my second or late house, and I usually commence operations, for starting vines into growth, about February 20th, by putting on a gentle artificial heat maintaining a temperature of from 45° to 48° at night, with a rise of five degrees by day when artificial heat is required, allowing the sun heat to run up to 80° with ventilators opened slightly, continuing this temperature until the buds show signs of life when I raised the temperature ten degrees admitting air on every bright day, carefully avoiding cold draught on young and tender foliage, which "young leaves" appear in two or three weeks after buds show signs of life. At this time I raise to my maximum temperature of 65° nights and 70° by day artificial heat; sun heat from 80° to 88° with a free circulation of air on every favorable occasion.

Syringing.

Vines are syringed freely morning and afternoon on all bright days until they are in bloom when syringing is discontinued and a drier atmosphere maintained, only sprinkling floor about noon on bright days, until fruits are set, when we again syringe freely until grapes commence coloring, when we cease putting any water on foliage or fruits.

Watering and Feeding.

The border is given a thorough soaking with tepid water when first heat is introduced, and again as soon as bunches show themselves. Then after grapes have been thinned, weak liquid manure is given to help to swell up the berries and continued as the border may require until grapes show color, when we cease giving any more liquid manure, and use only clear water, until fruits are ripe, when water is given only in sufficient quantities to prevent shriveling of berries, and a drier atmosphere maintained, with abundant air on all favorable occasions.

MRS J. C. WHITIN'S ESTATE, WHITINSVILLE.

On August 1, the committee visited the estate of Mrs. J. C. Whitin at Whitinsville, to inspect a house of foreign grapes and a house of other fruits as grown by Wm. McAllister, head gardener on the estate. The grape houses are two in number but the one we were called to inspect contained ten vines six years old averaging about twenty bunches to each vine. The varieties consisted of Grizzly Frontignan, Lady Downs, Muscat of Alexandria, Mrs. Pearson, Mrs. Prince, Black Alicante, Muscat Hamburg, Wethersfield Court, and Golden Queen. The bunches were well colored and the fruit was of luscious quality, but the bunches would have been larger if the vines had not been allowed to carry so many of them.

The fruit house was a great surprise to the committee, as it was of the most approved construction and contained the most splendid collection of fruit ever seen by the committee. The house was a span roof running east and west with a walk down the

Grape House of Miss E. Jackson Clark, Pomfret, Conn.

centre with trellises on each side across the house with peaches and nectarines trained espalier to each, and heavily fruited. Between the trellises stood forty pots of fruit, also well filled with peaches, etc.

Some of the peaches we measured were three inches in diameter and of perfect quality. It is with great pleasure that we award to this fruit house the first special prize offered by Edward Hatch for fruit houses.

This house was so exceptionally fine that we cannot endorse too much its construction and method of planting and fruiting, and as a slight token of our appreciation we award it the Silver Medal of the Massachusetts Horticultural Society.

We are pleased to add to this report a statement from William McAllister on the culture of hothouse fruits.

The Fruit-house of Mrs. J. C. Whitin, Whitinsville, Massachusetts, was built in the summer of 1900, size 164x25 feet. It is heated with hot water, two inch wrought iron pipes used. The house is an even span running east and west and trellises put across that the trees may get the full benefit of the sun. Trees are much easier taken care of than where they are trained up the roof; especially when syringing, a person can get at both sides of the trees without any trouble.

In this house are planted twenty-two trees on trellises and forty in pots. One third of these are nectarines, our preference being peaches. We think the best varieties are Royal George, Barrington, Noblesse, Crimson Galande, Early Silver, Princess of Wales, Sea Eagle, Elberta, Alexander Noblesse, Golden Eagle, and for nectarines, Cardinal, Early Rivers, Milton, Lord Napier, Newton, Pine Apple, Rivers Orange, and Victoria. These are good varieties of nectarines and need the same treatment as the peach. This house was planted the first week in November. We believe in planting in the autumn as soon as the trees shed their leaves. Our time for pruning is usually in January, and allow them to start to grow in February, having them flower by the end of March or the first week in April with fruit in July. The temperature must be kept rather low, not over 45° at night at first, increasing temperature as they advance in growth.

The soil used for the borders is a turfy loam from good pasture land. In this way I have had very good results.

WILLIAM MCALLISTER.

H. H. ROGERS' ESTATE, FAIRHAVEN.

This estate is entered for the Hunnewell Triennial premiums and this was our second visit. The general character of the estate is the same as last year although a considerable plot of ground had been reclaimed and brought under cultivation. The estate consists of about thirty acres which is nearly all level land with a portion in forest. On this Mr. Garthley, the gardener, is yearly encroaching and bringing it into such shape as to grow flowers and flowering shrubs.

The estate has all the electric power needed to light the buildings, the grounds, and run all the machinery needed to carry on a large establishment. Mr. Rogers' last work in beautifying the town of Fairhaven is the building of an elegant and costly church edifice for the use of one of the religious societies of the town. His benefactions to the town in building public edifices are truly wonderful and we are glad to note the public spirit he manifests.

We were invited to visit these buildings, which we did with great appreciation, and afterwards were driven all over the old whaling town of New Bedford and into its beautiful suburbs. A day of "restful pleasure" was enjoyed by the committee.

EDWARD J. MITTON'S CROTON HOUSE AT BROOKLINE.

On the 21st of August we were called upon to inspect a house entirely filled with crotons. This was a new experience for your committee as it is well known that crotons are cultivated entirely for their foliage. Mr. J. Lawson, the gardener, is particularly fond of these quaint plants and grows them to perfection.

The house contained eighty plants of about fifty varieties and their luxurious growth showed the high cultivation bestowed on them by the gardener. The colorings of the leaves were remarkable and the endless shapes of the foliage were still more so.

The house had no other plants therein, yet looked at as a whole it presented the appearance of a house filled with endless varieties of flowering plants in full bloom.

It was a remarkable house and once seen will long be remembered.

J. B. Lawrence's Dahlia Farm, Abington.

On the 9th of September we visited the dahlia farm of Mr. and Mrs. Lawrence which consisted of one hundred varieties of dahlias and two thousand plants. They were of the best kinds, were in full bloom, and made a grand appearance. Some of the best were named as follows:

King of the Cactus,	Mrs. Gladstone,	Frank Smith,
Maid of Kent,	Henry Patchett,	Grand Duke,
Nero,	Lucy Faucett,	Catharine,
Mrs. Dexter,	John Lamont,	Fernleaf Beauty,
Dr. Kirtland,	White Swan,	Meteor,
Fanny Purchase,	Livoni,	Mrs. Snow.
Wm. Agnew,	Alice Emily,	

William P. Lothrop's Dahlia Farm, East Bridgewater.

Mr. Lothrop's farm, consisting of six acres of dahlias, was inspected by your committee on the 16th of September and then it was in full bloom. There were over 25,000 plants, comprising over 100 varieties, and each variety was planted by itself. The great show of brilliant color and variety of shapes made a gorgeous spectacle. One portion of the garden was made to grow dwarf plants, by judicious pruning; other parts were left to grow naturally supported by stakes.

Mr. Lothrop has kindly prepared at the request of the Garden Committee the following notes on the dahlia and its cultivation.

Mr. Patrick Norton, Dorchester, Mass.

My first interest in dahlias was aroused in 1893 when I bought one dozen for my own pleasure.

There were supposed to be twelve named varieties and I looked forward with pleasure to the blooming season; but when it arrived I found that my attention had been lavished on a collection containing three inferior kinds.

The season following I bought eighty-eight varieties from various American seedsmen and found these almost wholly unsatisfactory.

I immediately decided that the majority of American dahlias were second rate or less; also that there was a market here for the finer kinds.

Before the next spring a partnership was formed under the firm name of Lothrop & Higgins for the purpose of establishing a dahlia specialty business.

That year we imported varieties from England, Holland, and Germany, and were very successful, finding the demand far greater than our ability to supply. Since then we have continually searched Europe for new and better kinds and have been amply rewarded by an unprecedented success at the New England and New York exhibitions.

In the autumn of 1901 Mr. Higgins retired from the firm.

All through the rapid growth of the business I have found that the increase in the number of my imported varieties has been more than paralleled by an increase in public interest, and in the demand for the newer kinds.

In regard to flower shows, I wish to say that the fact of these exhibitions being public educators was never more evident than since dahlias commenced to rise in popularity. I have obtained varieties in Germany to test, in lots of one or two of a kind, and have been so pleased with some special bloom that I exhibited it at the Mass. Hort. Society; before the time for planting arrived the next spring I had received orders and inquiries for this variety from six states.

In addition to importing I have obtained several new ones by scientific crossing; the most remarkable instance is the result of a cross between the Grand Duke Alexis and A. D. Livoni, the progeny in plant, shows all the traits of the G. D. Alexis, also in the shape and size of the bloom, but this has the true pink color of the A. D. Livoni.

In regard to planting: Here in New England the proper time is from May 15th to June 10th.

It must be understood of course that this is not for *early* blooms but for *best* blooms. If one desires smaller flowers and a greater

Dahlia Farm of Wm. P. Lothrop, East Bridgewater, Mass.

A field of "Perle de la tête d'Or."

quantity he should plant by May 15, nipping every bud which appears before August 1st. By this time the plant will have attained its full growth and its whole energy will be thrown into blooming.

The single stem branching system offers the best and prettiest method of culture. It is as follows:

One shoot only is allowed to grow. When the shoot has two pairs of leaves and an undeveloped growth on the top, it is pinched back as far as the upper leaves. Four branches will then start, one at each leaf. When the plant is grown it will have a short, strong, single stem, which comes only an inch or two above ground, and four long branches which are strong enough to hold themselves up without stakes, giving the plant a neat bushy appearance.

If planted between the two dates, as first suggested, they will reach flowering size at about the proper time. There are, however, a few kinds which should invariably be staked; such as Frank Smith, Beatrice (cactus), Grand Duke Alexis, Dr. J. P. Kirtland, Ernest Glasse, etc.

In regard to fertilizer: I plan to change each year; one year using barn manure; another prepared fertilizer; the next raw chemicals, such as nitrate of soda or muriate of potash.

My experience has taught me that the kind and amount of fertilizer used are not of as great moment as is the cultural care.

Just as soon as the last tuber is covered I commence to cultivate and continue doing this each week and sometimes twice a week until the blooming season arrives. The last few times using a fine twelve-tooth cultivator. I then give the second hoeing which is also the final one. In this way the ground is left as fine and smooth as a garden.

Regarding storage: The tubers are lifted immediately after the first killing frost, dried in the field three or four hours and laid in a dark shed. When all are dug they are separated and all packed in dry sand in a cellar which ranges in temperature from 38 to 42 degrees.

W. P. Lothrop.

East Bridgewater, Mass.

Greycourt, the Summer Home of Charles H. Tenney, Methuen.

On October seventh your committee was called upon to make their third year's call at this beautiful home, thus completing the time of entry for the H. H. Hunnewell Triennial Premiums.

The more we see of this place the better we like it and we can now more fully recommend it as a model of perfection to gentlemen about to build homes to live in. In the spring time the trees, just showing their new growth, were beautiful, but in the fall they had put on the still more beautiful appearance of maturity, winding up the season with all the colors with which nature's alchemy could endow them.

They were noble trees and everyone a splendid specimen of its kind with plenty of space in which to expand and develop. The President of our Society walked all over the place one morning in October and when asked his opinion of it he replied that it was "the noblest place in the Commonwealth," and this only confirms the judgment of your committee.

Mr. Tenney is always beautifying his estate and his last endeavor is the completion of a splendid bowling green where the noble and manly sport can be enjoyed on a gentleman's estate. His inclination seems to lead him in the direction of building such structures as will beautify the estate and at the same time contribute to the pleasures of his numerous guests.

We take sincere pleasure in awarding this estate the H. H. Hunnewell Triennial Premium.

Mr. Tenney has had in his employ ever since he began to improve this estate a faithful and enthusiastic gardener, Mr. Gall, who has carried out in a masterful way all the instructions and plans for beautifying these grounds; and how well he has done his work the estate as it stands today speaks for itself.

Mrs. A. W. Spencer's Chrysanthemum House, South Framingham.

On the 30th of October we visited the estate of Mrs. A. W. Spencer, at South Framingham, to inspect a house of chrysanthe-

mums planted on benches. There were three hundred and fifty plants of thirty varieties of the best kinds grown. These were all grown for one flower each and presented a beautiful appearance. Alex McKay the gardener, also had in other houses four hundred and thirty-five plants in pots which were fully as handsome blooms as those on benches, and he likes to grow them in pots because they are so easily moved to make room for other incoming plants. Mr. McKay is to be commended for his proficiency in growing the Queen of Autumn.

Hon. E. S. Converse's Estate, Malden.

The last visit of the season was on the 4th of November to inspect two houses of chrysanthemums, one grown on benches and the other house filled with large plants, interspersed with fine foliage plants, to produce a fine effect.

The house planted on benches contained five hundred plants of one hundred and sixty varieties, well flowered, and presented a fine appearance. The great number of varieties added very materially to the attraction.

The house of chrysanthemums arranged for effect with other plants was an unqualified success and Mr. D. F. Roy had occasion to feel elated at the success of his endeavors.

The house was beautifully arranged and its beauty was enhanced by having so many standard chrysanthemums to break up the otherwise monotonous appearance of the low-growing plants. We commend Mr. Roy's good taste and proficiency in growing and arranging chrysanthemums.

Mr. Roy has sent us the accompanying notes on the cultivation of the chrysanthemum which will add to the value of this report.

Mr. Patrick Norton.

Dear Sir:—In answer to yours of the 26th instant I would say that we propagate our chrysanthemums, for growing on benches, the last week in April. When they are well rooted we put them in two and one-half (2½) inch pots using loam, leaf-soil, and sand; then we plunge the pots in ashes in a cold frame, which gives us short-jointed stocky, plants. About the second

week in June we plant in benches, using a rich compost consisting of sod cow manure and bone meal. As the soil in this locality is rather light we add one load of clay to every three of loam. When planting we firm the soil well around the plant, leaving a hollow around each one for water. We are very careful about watering until the plants get hold of the soil. Then they take more water but we never allow the soil to be saturated. About the first week in August we give a mulch of well-rotted cow manure which keeps the roots cool and acts as a fertilizer. During the hot months we syringe three times a day.

We feed with liquid manure when in our judgment the plants require it, using sheep, cow, and horse manure at intervals. Commercial fertilizers we use very sparingly; possibly a dressing of Clay's and a dose of nitrate of soda, a few times during the season. The night temperature is kept between 50° and 60°. When the blossoms begin to open we use shading made of light cloth.

The foregoing remarks practically cover our mode of cultivating the Queen of Autumn.

Yours truly,

D. F. Roy.

Malden, Mass.

The Prizes and Gratuities awarded this year are as follows:

H. H. Hunnewell Triennial Premium.

For an estate of not less than three acres, which shall be laid out with the most taste, planted most judiciously, and kept in the best order for three consecutive years:

First, Charles H. Tenney $160 00

Special Prizes from the John A. Lowell Fund.

For the best house of Chrysanthemums, arranged for effect with other plants:

First, Hon. E. S. Converse 30 00

For the best house or houses of Chrysanthemums grown on benches:

First, Hon. E. S. Converse 30 00

Second, Mrs. A. W. Spencer 20 00

Special Prizes offered by Edward Hatch.

For the best Fruit House, plants grown in pots or tubs included:

First, Mrs J. C. Whitin	$30 00
Second, Miss E. J. Clark	20 00

Society's Prizes.

For the best House of Foreign Grapes:	
First, Miss E. J. Clark	30 00
Second, Mrs. J. C. Whitin	20 00
For the best House of Carnations:	
First, Patten & Company	30 00
For the best Vegetable Garden:	
First, George D. Moore	30 00
For the best House of Cucumbers:	
First, George D. Moore	30 00

Gratuities.

Hon. E. S. Converse, House of Grapes	20 00
E. J. Mitton, House of Crotons	25 00
J. B. Lawrence, Dahlia Farm	15 00

William P. Lothrop, Dahlia Farm, a Silver Gilt Medal.

Miss E. J. Clark, Superior Cultivation of Grapes, a Silver Medal.

Mrs. J. C. Whitin, Superior Cultivation of Nectarines and Peaches, a Silver Medal.

Respectfully submitted,

PATRICK NORTON,
ARTHUR H. FEWKES,
J. WOODWARD MANNING,
E. W. WOOD,
WARREN H. HEUSTIS,
J. H. WOODFORD,
JACKSON T. DAWSON,
HENRY W. WILSON.

Committee on Gardens.

REPORT

OF THE

Committee on School Gardens and Children's Herbariums

FOR THE YEAR 1902.

By HENRY LINCOLN CLAPP, CHAIRMAN.

Weeding. — George Putnam School Garden.

The experience in gardening obtained during the summers of 1900 and 1901 made it evident that a smaller number of beds of larger dimensions would give more satisfactory results. The beds (3½ by 10 ft.) were too small to furnish employment to the young gardeners except for a very short period.

Perhaps the gardeners had put their beds in perfect order after school hours during the previous afternoons, and could find no work to do when the afternoon (Monday) appointed for gardening came. Then, naturally enough for children, they found

Making beds on rough plowed land. — George Putnam School Garden.

something to do that was not on the school program. Hoes were put to very singular uses in the short absences of the director, lumps of earth took wings, and foot-prints of human beings made intaglios in the soft earth of the beds. These misplaced impressions were observed with a good deal of solemnity by the director and aberrant gardeners. The latter always appeared to know more about planting seeds than planting footsteps, probably from the fact that the former is done so deliberately and the latter so precipitately.

Under these natural conditions eighty pupils seemed a rather generous number for one pair of eyes which were of the ordinary

wide-angled species, but, nevertheless, could take in only about one quadrant at a time.

Moreover, a much greater variety of plants can be raised on a large bed than on a small one. This makes the work far more interesting. The produce of a large bed amounts to something; it will make some show on the dinner table. The work seems more like real work and less like play work.

Accordingly the beds were cut down to forty, each 8 by 10 ft. This was done in a very simple manner. The path between each pair of old beds was dug up and leveled up by the addition of soil in such a manner as to unite the two beds into one large one. No new paths had to be made.

Seedlings in May. — George Putnam School Garden.

The forty pupils who were selected to cultivate the beds were much more interested and far steadier than the eighty who had worked the year before. They could be left to work without an overseer. They considered their work as the real thing. They raised immense parsnips, summer squashes, radishes, lettuce, carrots, beets, beans, corn, kohl-rabi, etc., besides a greater variety of flowering plants.

The janitor frequently found them at work until six o'clock P. M. and even later, and on Saturdays also. Some kept their

gardens in fine order during the summer vacation, though they had no director to direct and encourage them.

One day in October two photographers and a reporter from the office of the "Boston Globe" came out to photograph and write an account of the garden. Each pupil was asked to state what he had raised. Three pictures were taken and they appeared afterward in the "Globe." One represented a boy with an arm load of huge parsnips which he carried home to eat.

Monday, October 27, the pupils scraped up bushels of leaves that had fallen from the ash and maple trees growing about the school grounds and added them to the weeds and vegetable rubbish of their gardens.

Weeds for the fire. — George Putnam School Garden.

Then the director set fire to one heap placed in the centre of one bed, and soon the fire was carried to other heaps until there were a score of small fires sending off flames and volumes of

smoke. Then there was hurrying and scurrying to get more leaves to keep the fires going, and there was a scene of activity that is seen on the premises only once a year. The result was the conversion of an immense amount of rubbish into ashes with which the beds will be fertilized, not to speak of the admirable exercise and exhilaration of mind attending the whole work. Quite different from book learning.

Lining out beds. — George Putnam School Garden.

It is a difficult matter for many pupils to keep their beds in line because they stick so closely to their own beds and view them from so short a range. They are repeatedly directed to go some distance away from their own beds and then compare their edges with those of other gardens. Pupils from twelve to fifteen years of age do not know what "sighting" means until they are taught in the garden.

November 3 the paths were straightened and November 10 the bulbs were planted. Advice had been previously given as to the most satisfactory bloomers, the best bulbs for the money spent, the manner of planting,— depth, distance apart, preparation of soil, etc.

Visitation Day. — George Putnam School Garden.

Weeding after School. — George Putnam School Garden.

Some pupils worked till dark; some carted in dressing on Saturday; and all worked hard without being conscious of it. It is the bodily action that quickens the mental and makes garden work suitable for and enjoyable to children.

SUCCESSES AND FAILURES.

The gardens established by the National Cash Register Company, Hartford School of Horticulture, Twentieth Century Club

of this city and Hyannis State Normal School are all in a flourishing condition because they have a good financial backing.

The gardens in Medford, Wenham, Trenton, and Louisville, Kentucky, I have reason to believe, have failed, and mainly, in my opinion, because they did not have adequate financial support. The George Putnam School garden seems to be the only one without outside aid that is still carried on.

It is interesting to learn that Mr. Philip Emerson, Principal of the Cobbet School, Lynn, Mass., has started a school garden, which it is expected will be entered next summer for one of the school garden prizes offered by this Society.

ADEQUATE SUPPORT OF SCHOOL GARDENS.

School gardens should be supported as other institutions of learning are supported, if good results are expected. No doubt, the school garden in the beginning may be worked with much enthusiasm, partly because it is a novel and reasonable undertaking; but hard work which only entails money obligations to a considerable amount soon diminishes the enthusiasm of both teachers and pupils. To work your passage and pay, too, soon comes to border on drudgery.

Simply to put seed into the ground expecting nature to do the rest in producing a handsome crop is expecting too much. There are fertilizers, seeds, tools and perhaps young plants to be bought every year. To leave the garden to take care of itself three months in summer is not the way to ensure fine crops in autumn. Continuous care of plants is necessary; and the only way to provide for that is to employ a director and pay him for directing. Premiums for the best results would also promote the work. This is the way the Dayton boys' gardens are carried on so successfully. So the ideal summer school, or vacation school, might be found in a school garden.

But weeds do not make much progress in a single night, and to hoe a small bed every day would be quite unnecessary. Other opportunities for the children's activities must be furnished—swings, teeter boards, ladders, sand piles, vaulting bars, etc.,—all of which the Massachusetts Civic League has provided in their establishment on Columbus Avenue, Boston.

Here is an opportunity for any enterprising Society to do a great work in cultivating horticultural tastes in children and at the same time win an enviable reputation for service of the greatest importance. The opportunity has been seized already. It is not repeating too much to say again that the National Cash Register Company, Twentieth Century Club, Massachusetts Civic League, Hyannis State Normal School, and Hartford School of Horticulture are paying all the expenses of gardens from year to year. So all the advantages of school gardens will be sure to be made manifest by these Societies or schools.

It would be quite proper for any well-endowed Society to undertake a similar work,—the actual support of a school garden to a successful result. A hundred dollars a year would do it. Probably fifty dollars would suffice where a garden has been made on land free of cost.

At present this Society on a small amount of money (this year $60) is doing as much as can be done, offering premiums and printing and circulating reports. But school gardens established by means of the encouragement of these premiums, without other means of support cannot endure. They cannot live on reports, however spicy and well illustrated they may be. They never should be expected to be self-supporting.

Imagination is quite unable to picture the progress that would be made in horticulture and agriculture in Massachusetts in a few years, if a few thousand dollars a year were devoted to the support of school gardens where the culture of flowers, vegetables and fruits, large and small, might be practiced. This kind of seed ought to be planted, and those who really desire to do the very best service are planting it.

The honors that should be ours should not go to others simply on account of inadvertence, if there is no other reason.

The words of Ex-President Appleton on the occasion of the dedication of the new Horticultural Hall, "the encouragement of window gardening and school gardens is a most commendable feature of our work," should mean something substantial on which practical work can be founded and sustained. In fact, Massachusetts should take up the work.

HALIFAX, N. S., HOME GARDENS.

August 27, 1902, Mr. A. H. McKay, Superintendent of Schools in Halifax, N. S., called upon me and stated that the children of that city have been induced to make and cultivate gardens at their homes, for the reason that they will be likely to take better care of their home gardens than school gardens during the summer vacation, and they can suit their own convenience in working in them. Moreover, they will not be required to walk any distance worth mentioning and water will always be available, which is a very important matter in maintaining a garden successfully.

As previously intimated, the most serious drawback in the conduct of school gardens is their general neglect during the summer vacation, unless a director is employed to meet the children regularly, or substantial money prizes are offered for the best gardens.

A grant of money by the city of Halifax ensures the establishment and maintenance of the children's home gardens. That is an example worth following by the city of Boston or any other that would be in the front rank of educational and civilizing processes. The matter should not be left to be undertaken and carried through by clubs and private individuals.

President Eliot says work is the greatest civilizer, and there is no better work for children than that found in a school garden or a garden at home. The school garden is, perhaps, more educative while the children are going to school, because the reasons for results are given while the plants are growing; theory and practice are properly connected. In the home garden explanations are largely wanting, provision for success or failure is far less certain, and what is learned comes more circuitously and therefore more slowly.

HOME GARDENS IN ST. LOUIS.

The Sunday "Post-Dispatch" of St. Louis in 1902 offered thirteen prizes for home gardens made by children under sixteen years of age. Two hundred seventy-one children entered the contest. The Englemann Botanical Club furnished flower seeds at two cents a package, and many packages were sold.

The report says, "Ash heaps, back yards, bare spots of dark unsightly soil have been converted into exquisite flower beds and nice grassy lawns. Hideous board fences have been transformed

into beautiful emerald walls. Never in the history of St. Louis have so many flowers adorned its yards. The sick in the various hospitals have been cheered by the flowers, churches and homes have been decorated with them, and hundreds of friends of the children have shared the beauty and fragrance of the little flower gardens. The children have learned to know and care for flowers and have a better understanding of nature. They have changed many a humdrum yard and many a faded street into the dignity of a lawn or a beautiful thoroughfare.

The good effects are far-reaching in that hundreds who did not enter the contest were induced to make special efforts for home improvement."

A committee of three awarded the prizes: — Mr. H. C. Irish, assistant director of the Missouri Botanical Garden, Miss Isabel Mulford, a former teacher of botany in Vassar College and Mr. W. J. Stevens, principal of the Pope School. Mr. Stevens originated the plan by which Carthage, Mo., was made the most beautiful city in Missouri. Evidently these people consider that their time, skill and efforts are well spent in inducing children to make gardens at home and take care of them.

The prizes consisted of gold coins,— $20 for the first, $10 for the second, $5 for the third, and $1 each for the others taken in the order of merit. There were two contestants for the third prize so nearly alike in merit that $5 was awarded to each. The total awards amounted to $50.

It is worthy of notice that this work was carried out by a paper company, not by a horticultural society that might be naturally expected to favor gardening.

GARDENS OF THE MASSACHUSETTS CIVIC LEAGUE.

An admirable enterprise for the education and amusement of poor children during the school vacation has been inaugurated by the Massachusetts Civic League, Boston, Mass.

There is a large area of land on Columbus Avenue fitted up with all sorts of apparatus for the exercise and amusement of children— swings, teeter boards, sliding poles, sand piles, ladders, spaces for playing base ball, lawn tennis, croquet, etc., and a full corps of directors of games.

But especial mention should be made of 350 children's gardens, 110 of them being on Columbus Avenue. The beds are about 3½ by 6 feet in area and all together contain a great variety of garden vegetables and flowers. Some are neatly outlined with small rounded stones whitewashed. At four o'clock each afternoon the children who choose to do so come to water the gardens; and those belonging to absentees get just as much water as any others. The children appear to be delighted to use the watering pots; and some in their ardor wet themselves.

Children's Gardens, Massachusetts Civic League, Boston.

One little miss of ten told me that when she first received her garden she "got all wet in front." Then she continued, "The fence was all painted too, and I leaned up against it, like this, and got paint all over my dress. When I went home my mother said I must go to bed for making my dress look so. So I went to bed and staid about five minutes, and then got up and went out on the front doorsteps to play."

"Did your mother know when you went out?" I asked.

"No," she replied.

Naturally enough the gardens show various degrees of success, and give no evidence of being molested by marauders. As I went into the grounds I saw two girls, about seven years old, rather better dressed than most of the children, picking flowers, of which they had quite a little bunch apiece. "Is that your bed?" I asked. "No," said one of the girls, "It belongs to a girl whom I

Watering.—Massachusetts Civic League Gardens, Boston.

know." "What is her name," I continued. She replied, "I can't think of it just now, but I know her when I see her."

The young lady who has charge of the garden work keeps a record of the condition of the beds, and neglect of a bed results in its loss, and another child gets it.

Something besides gardening is taught — patience, forbearance, respect for the rights of others, respect for labor, neighborly assistance, with the thoughts of doing as much as possible, instead

of as little, which seems to be the animating principle in this age of strikes. No doubt the children will get over their unselfishness later on, but they are started aright.

My camera to a good degree will make up for the inadequacy of my words in describing these gardens.

Watering. — Massachusetts Civic League Gardens, Boston.

WEST INDIAN SCHOOL GARDENS.

The school garden movement has reached Jamaica and other islands of the West Indies.

The last number of "The West Indian Bulletin" devotes considerable space to the subject of school gardens, and clearly shows how estimable an educational means the school garden is thought to be in the West Indian Islands.

Among the many wise and suggestive remarks made are these: "School gardens and school plots are now a recognized feature in many of the West Indian Islands." "Object lessons in country schools should tend to produce a taste for work and study out of doors. All good object teaching should give the scholars something to do with their hands."

Several plans of gardens and schemes of work in actual operation are given. The first scheme is carried out by a village school of one hundred and eighteen pupils with one head teacher and three assistants. The second employs one hundred pupils in a rural district. Each plot is thirteen feet square and is planted with a good variety of vegetables. The third makes provision for one hundred and twenty pupils under the charge of three certificated masters. Plants, insect and other animal life are carefully elaborated in the scheme and as carefully worked out by the children. The boys of this school collected, dried and mounted over two hundred different species of wild flowers.

The fourth is the most elaborate scheme of all, and is worked out by one hundred and twenty pupils under the instruction of a master and two assistants in the town of Kent.

The course is really scientific and includes the study of air, seeds, soils, weeds, grasses, shoots and roots by means of nicely contrived apparatus in doors in inclement weather and much observation and work out of doors in pleasant weather.

This is a very meagre summary of the article, but it shows clearly enough that Massachusetts can look to the West Indian Islands with profit as regards cultivating in children a taste for horticulture and country life. And the government is doing it. The government of Massachusetts is doing practically nothing about it, but is still hammering away on curricula that point the children pretty straight to a shop of some kind.

In a previous number of "The West Indian Bulletin," Vol. 3, No. 2, 1902, is this mention of one school garden:

"In one of the most successful schools, Mount Fletcher in St. Andrew, I am informed that the school children beg for seeds and cuttings to take home, and that not only are flowers eagerly sought after to cultivate but considerable quantities of vegetables are now raised locally and either consumed or sent to the Kingston market. The grant of £8.7s given in this instance is undoubtedly money well spent. The school garden is well worth a visit from any one who is interested in the development of agriculture amongst the people." The sales of the produce of this garden amounted to twenty-five dollars.

It will be noticed that the expenses exceeded the receipts by about fifteen dollars; in other words the garden was not self-

supporting; and the gentleman who reported on school garden work in Jamaica mentioned the deficiency with a tone of regret. What school ever is self-supporting in the short run? It is the result of instruction in the long run that shows that schools pay. If it cost forty dollars to instruct forty children in garden work during one summer, no doubt the value of the instruction outweighed the cost.

The Barbados "Agricultural News," January 3, 1903, says: "School gardens are rapidly becoming recognized features of the educational work in several of the colonies. The time is approaching when every child in the West Indies will be enabled to learn practically the principles underlying agriculture."

ARTICLES AND LECTURES ON SCHOOL GARDENS.

"Current Literature" for November, 1902, contained a two-column article on school gardens, summarized from another article written by Mr. Dick J. Crosby in the "Outlook." In speaking of school garden work the editor says, "It is the kind of hard work that takes children out of doors and makes them feel like whistling, and no amount of such work ever makes nervous wrecks.

"The school garden should be found in connection with every kindergarten. The little fellows learning to recognize colors and geometrical forms should see the more pleasing natural colors and forms. They should be given an opportunity to see how the plant gets out of the seed, how the stem pushes upward and the little leaves turn green, while the white root pushes down into the soil. They should plant a few seeds for themselves, and then water and care for the plants when they come up. Thus will they learn and love to learn; thus will they get out in the pure air and sunshine."

Mr. George Henry Knight of New York has written several very readable articles on school gardens, and is now preparing another.

Dr. F. M. Powell of Glenwood, Iowa, has a strong article on that same subject in the Transactions of the Iowa Horticultural Society, now in our library.

Dr. Helen C. Putnam of Providence wrote several articles for the "Boston Transcript" which were afterwards put into pamphlet form. She made a very strong plea for the establishment of school gardens.

Mr. Dick J. Crosby of the Agricultural Department at Washington has prepared a stereopticon lecture on the subject.

Mr. H. D. Hemenway, Director of the Hartford School of Horticulture, is doing the same.

I have made eighty slides, a part of which were shown at a meeting of the Boston Society of Natural History last winter, and shall show all of them at a meeting of the Rhode Island Horticultural Society in Sayles Hall, Brown University, Wednesday, February 18, 1903.

Mr. Samuel B. Greene, Professor of Horticulture and Forestry, University of Minnesota, writes me: "We are trying to do something of the sort in this section and want to get all the helpful data we can bearing on the subject. If your report for 1901 has been issued, I would like very much to get a copy of it, and would like to know if you have any collection of photographs on this subject that we could obtain. We shall be glad to take care of any expense incident to obtaining this matter."

From this I presume that he will prepare an illustrated lecture. I sent him a number of reports and magazine articles treating of the matter.

Our secretary informs me that he has many more calls for school garden reports than for all the other reports of this Society combined.

A long and valuable list of articles on school gardens written by prominent persons will be found on page 249. I am glad to know that such prominent and influential people do not esteem the school garden propaganda beneath their dignity, nor unworthy of their time and studious attention. They realize that children will be men and women one of these days, and what their tastes for or against horticulture may be is a matter of considerable concern, not only as regards their own happiness and usefulness but as regards the progress of horticulture itself.

It ought to be a cause for great rejoicing that a new way has been found for interesting and educating city-bred children by raising plants, wild or cultivated. Any horticultural society might well rejoice every time it induces a single person, man or boy, woman or girl, to get possession "of a little farm well tilled," though it be nothing more than a bed eight by ten feet.

WOMEN AS GARDENERS.

Rumored Movement to Start New Department at Wellesley.

(Post, November 17, 1902.)

Wellesley, November 16.—Wellesley College, ever on the move toward the goal of progression, has in contemplation, according to friends of the college, a movement to install a new department of learning for women, namely, that of gardening.

While this may be somewhat of a novelty to Americans, there is nothing wonderful about it in England, where such an institution for female education has been established for the past fifteen years, and hundreds of successful graduates turned out.

The promoters of the new idea at Wellesley claim that no other female institution of learning in America has better advantages and facilities to conduct such a department, and as an argument point to their own spacious grounds and the splendid property and hothouses on the Hunnewell estate, famed the whole world over.

The Horticultural College at Swanley, Eng., covers all departments of farming except that of cattle. Women who hold graduates' certificates from it know the science of farming in the flower garden, in the vegetable garden and in the orchards, and, besides, what few graduates of ordinary agricultural colleges have any experience in, the manual labor of all kinds of horticultural work. They can hoe and spade when they have finished their work courses as well as any farm hand. Instruction is given, too, in the conduct of a dairy, the raising of bees and of chickens; in short, they learn in a few years what most men farmers who go to school to mother nature spend their lives in learning.

GIRLS STUDYING FARMING.

More than fifty girls are studying scientific farming in the Minneapolis College of Agriculture. The course they take includes botany, chemistry, physics and geology, requiring in the first two years two terms of each. They pay special attention to cooking, laundering, household economics, furnishing houses and social culture. They learn to plan buildings and to lay out grounds. By this means it is hoped that farmers can be provided with wives who will know enough about making life in the country attractive to keep the boys from emigrating to the towns and cities.

PLANT STUDY IN WASHINGTON, D. C.

Through the influence of Professor Galloway, of the United States Department of Agriculture, a plot of ground one hundred and fifty feet square, or a little more than half an acre, and a greenhouse have been secured for the purpose of instructing the pupils of the Washington Normal School in the common operations of plant propagation, such as making cuttings and placing them in sand to root; then potting and taking care of the young plants. They are to have all the facilities for studying botany, such as the grass gardens, the economic and medicinal plants, the fine collection of native and exotic shrubs and trees and a magnificent collection of herbarium specimens. If this work proves successful its scope will be enlarged.

There is an idea in Washington that instruction on the theory and practice of plant growth will in some way find a place in the common schools of the country; and so the Normal School girls are being prepared to give that instruction.

The work proposed was outlined in the "Boston Sunday Journal," January 4, 1903, in a three column article illustrated by four photographic reproductions.

Miss Sipe, the science teacher of the Washington Normal School, has charge of the work.

LIST OF ARTICLES PUBLISHED ON SCHOOL GARDENS.

ARRANGED IN CHRONOLOGICAL ORDER. COMPILED BY MR. H. D. HEMENWAY.

1890.

"Horticultural Education for Children," by Henry L. Clapp, Principal of George Putnam School, Roxbury. Transactions of Massachusetts Horticultural Society for the year 1890.

1891 to 1902.

Report of the Committee on School Gardens and Children's Herbariums of the Massachusetts Horticultural Society, by Henry L. Clapp, Chairman, Boston, Mass.

1898.

"School Gardens," by Henry L. Clapp. Published in "Appleton's Science Monthly," February.

Teachers' Manual for Elementary and High Schools. First Edition.

State of Nevada, Carson City, J. G. McCarthy, Superintendent. "Nature Study." Page 81.

Report of the Board of Trustees of Public Schools of the District of Columbia. Superintendent of Schools, Washington, D. C. "Vacation Schools." Page 49.

1899.

Report of the Commissioners appointed by the Legislature to Investigate and Report upon the Methods of Procedure in This and Other States and Countries in giving Instruction in Manual Training and in the Theory and Art of Agriculture in the Public Schools. L. D. Hart, Commissioner, Madison, Wis.

Chapter 33. "Methods of Instruction in Agriculture," U. S. Bureau of Education. Pamphlet.

Chapter 6. "Education in Central Europe." U. S. Bureau of Education. Pamphlet.

National Cash Register Company. Published in "Outdoor Art and Beautiful House Edition," June, Dayton, Ohio.

"School Gardens," by F. M. Powell, M. D., Glenwood, Ia. Read at the Iowa State Horticultural Society, Des Moines, Ia. Report.

Chapter 34. Extracts from Consular Report, U. S. Bureau of Education. Pamphlet.

Government Reports: Chap. 20. "School Gardens." U. S. Bureau of Education.

1900.

"School Gardens," by U. S. Bureau of Education. Washington, D. C. Bulletin.

"The Physician's Influence in Vacation Schools," by Helen C. Putnam, M. D. Reprinted from the Bulletin of the American Academy of Medicine. Pamphlet.

"Flower Gardens in Public Schools," by Jessie M. Good. Published in "How to Grow Flowers," The Floral Publishing Company, Springfield, Ohio.

Annual Report of the Superintendent of Education of the Public Schools of Nova Scotia, Halifax, Nova Scotia. "School Gardens." Page 27.

1901.

"School Gardens," by Henry Lincoln Clapp, Master George Putnam School, Roxbury, Mass. Reprinted from "Education," May. Also reprinted in pamphlet form.

Chapter 27. Consular Reports, U. S. Bureau of Education. Pamphlet.

Chapter 15. "Public Playgrounds and Vacation Schools," U. S. Bureau of Education. Pamphlet.

"Agriculture and Rural Life in Public Schools," by Willet M. Hays, Professor of Agriculture, University of Minnesota, St. Anthony Park, Minnesota. Bulletin.

Manual of School Law, Nova Scotia. Committee of Public Works and Mines, Halifax, Nova Scotia. Page 66.

"Farming in the City." Philadelphia Vacant Lot Cultivation Association, Philadelphia, Pa. Report.

"Self-Help for Those Who Can't Work in the Usual Business." Philadelphia Vacant Lot Cultivation Association, Philadelphia, Pa. Report.

"Manual Training in Public Schools." Reprinted from a report of the Ontario Educational Association, by Professor James W. Robertson, Ottawa, Canada. Page 15, "The Rural Schools."

"Report, Rules and Regulations adopted by the Park Commission, Dayton, Ohio, also Hints, Suggestions on Street and Decorative Planting, Maintenance of Trees, Shrubs, Lawns, etc."

Report of "Home Gardening Association," Cleveland, Ohio, by E. W. Haines, President.

"Home Gardening Association," Cleveland, Ohio. Report.

1902.

"A Public School Garden," by Henry Lincoln Clapp. Published in "New England Magazine," June.

Report of the School Garden Session of the American Park and Outdoor Art Association, including the following papers: "The School Garden as a Phase of Industrial Work," by W. A. Baldwin, Principal of the State Normal School at Hyannis, Mass. "Boston Sand Gardens," by Miss Ellen M. Tower of Lexington, Mass. "The School Gardens at the School of Horticulture," by H. D. Hemenway, Director

of the School of Horticulture, Hartford, Conn. "The National Cash Register Boys' Gardens," by George A. Townsend, Jr., of Dayton, Ohio. "Some Neglected Millions," by Mr. Knight, New York City. "How We Reach Eighteen Thousand School Children in New York," by Professor John W. Spencer of the Bureau of Nature Study at Cornell, University. "Nature Study for Children," by George F. Powell, Director of the School of Horticulture at Briar Cliff Manor, New York.

"The Hand Book for Planning and Planting Small Home Grounds," by Warren H. Manning. Published by the Stout Manual Training School, Menomonie, Wis.

Annual Distribution for Prizes for Outdoor Art and Landscape Gardening. Published by National Cash Register Company, June, Dayton, Ohio.

"The School Garden." Published by State Normal School, Hyannis, Mass., Hyannis, Mass. Catalogue and Circular.

"Efforts of the Pupils of the Public Schools for Home and Public Improvement," by Carthage, Mo., Public Schools, March 1.

"Two Foreign Schools and Their Suggestions," by Daniel S. Sanford. Published in "New England Magazine," May, 1133 Broadway, N. Y.

Prizes awarded to the Sunday Post-Dispatch Gardeners. Published in "St. Louis Post-Dispatch," Sept. 28, St. Louis, Mo.

"The School Garden." Published in "The Evening Star," Oct. 18, Washington, D. C.

"The Child Farmers of New York," by Louise Seymour Houghton. Published in "Christian Work and Evangelist," Oct. 25, New York City.

"The Country School and the Country Child," by O. J. Kern, County Superintendent of Schools, Rockford, Ill. Published in "School News," September, October, and November, Taylorville and Chicago, Ill.

"School Gardens, Their Devolopment and Functions," by Dick J. Crosby, Office of Experiment Stations, U. S. Department Agriculture. Published in "Outlook," August. With references.

"The Whittier School Garden." Published in "The Southern

Workman," of November. Published by Hampton Inst. Press.

"School Gardens at the School of Horticulture, Hartford, Conn.," by H. D. Hemenway, Director of the School of Horticulture. Read before Boston Meeting of the American Park and Outdoor Art Association. Published in "Park and Cemetery," September, 324 Dearborn St., Chicago, Ill.

"Boys Trained for Citizenship." Published in "The World To-day," October, 153-155 LaSalle St., Chicago, Ill.

"Garden Movement for Schools," by Dick J. Crosby, Office of Experiment Stations, U. S. Department of Agriculture. Published in "The World To-day," October, 153-155 LaSalle St., Chicago, Ill.

"Farming Industry in the United States." Published in "The World To-day," September, 153-155 LaSalle St., Chicago, Ill.

"School Gardening in the Boston Normal School." Published in "Modern Methods," April, New England Publishing Co., Boston and Chicago.

Second Annual Report of the Vacation School Committee, Hartford, Conn.

"A Story of Home Gardens," by Starr Cadwallader, Cleveland, Ohio, Pamphlet.

"The National Cash Register Company." Published in "Social Service" for January. Published at 287 Fourth Avenue, New York City.

DATES NOT ASCERTAINED.

Reports issued by the National Cash Register Company of Dayton, Ohio.

Bulletins Nos. 62 and 71 of the Deparment of Agriculture of State of Pennsylvania.

"Hampton Nature Study Leaflet No. 7." Published by Hampton Institute Press, Hampton, Va.

"Suggestions for Progressive and Correlative Nature Study," by G. M. Carver, Tuskegee Normal and Industrial Institute, Tuskegee, Ala.

Fifty-first Missouri Report of Public Schools, W. F. Carrington, State Superintendent, Jefferson City, Mo. "Nature Study."

Bulletins Nos. 121, 160, 205 of the Horticultural Division of Cornell University, Agriculture Experiment Station, Ithaca, N. Y.

Fifty-second Annual Report of the Public Schools of the City of Worcester, Mass. Superintendent of Schools, Worcester, Mass. "Nature Study and Garden Work." Page 48.

"The Country School and the Country Child." Winnebago County, Ill. Report.

Report of a visit to the Centralized Schools of Ohio, by O. J. Kern, County Superintendent of Schools, Rockford, Winnebago County, Ill.

"How to Beautify Carthage," by L. E. Archias Seed Company, 113-115 Main St., Carthage, Mo. Pamphlet.

Manual of Elementary Course of Study for the Common Schools of Wisconsin. L. D. Harvey, State Superintendent. "Nature Lessons." Page 89.

LIST OF PERSONS ACTIVELY ENGAGED OR INTERESTED IN CHILDREN'S GARDEN WORK.

Charles A. Allen, Secretary The Associated Charities, Dayton, Ohio.

William A. Baldwin, Principal Hyannis State Normal School, Hyannis, Mass.

Robert Barton, Principal Eliot School, 4250 Grove St., St. Louis, Mo.

W. D. Chamberlain, Vice-President The Beaver Soap Company, Dayton, Ohio.

Henry L. Clapp, Principal George Putnam School, Roxbury, Mass.

Dick J. Crosby, Office of Experiment Stations, Washington, D. C.

Mary C. Dickinson, Rhode Island Normal School, Providence, R.I.

The Edgemont Improvement Association, Dayton, Ohio.

L. D. Hart, Commissioner, Madison, Wis.

W. J. Hawkins, Principal of Irving School, 3829 North 25th St., St. Louis, Mo.

Professor Willet M. Hays, University of Minnesota, St. Anthony Park, Minn.

J. E. Higgins, City Supervisor of Agriculture, Honolulu, Hawaii.

Mrs. Horace B. Hooker, 837 St. Paul St., Rochester, N. Y.

Mrs. Alice Hungerford, Old Orchard, Missouri.
Iowa State Horticultural Society, Des Moines, Ia.
Frederic H. Kennard, Landscape Architect, 85 Devonshire St., Boston, Mass.
A. H. Mackay, Superintendent of Education, Halifax, N. S.
Massachusetts Horticultural Society, Boston, Mass.
Mrs. Henry Parsons, 22 West 44th St,, New York City, N. Y.
George P. Phenix, Principal State Normal School, Willimantic, Conn.
Philadelphia Vacant Lot Cultivation Association, Philadelphia, Pa.
George P. Powell, Director School of Practical Agriculture, Briar Cliff, Manor, N. Y.
Dr. H. C. Putnam, 127 Angel St., Providence, R. I.
Charles H. Ramsdell, Menomonie, Wis.
C. G. Rathman, Garfield School, Jefferson Avenue and Wyoming Street, St. Louis, Missouri.
Raymond Riordon, Greenleaf School, Washington, D. C.
Professor James W. Robertson, Commissioner of Agriculture, Ottawa, Canada.
E. G. Routzhn, 1 Sunset Avenue, Dayton, Ohio.
Professor John W. Spencer, Ithaca, N. Y.
W. J. Stevens, Principal Pope School, St. Louis, Mo.
Miss Ellen M. Tower, Lexington, Mass.
George A. Townsend, Jr., National Cash Register Company, Dayton, Ohio.
F. A. Verpeauch, South Manchester, Conn.
Miss Dora Williams, Boston Normal School, Boston, Mass.

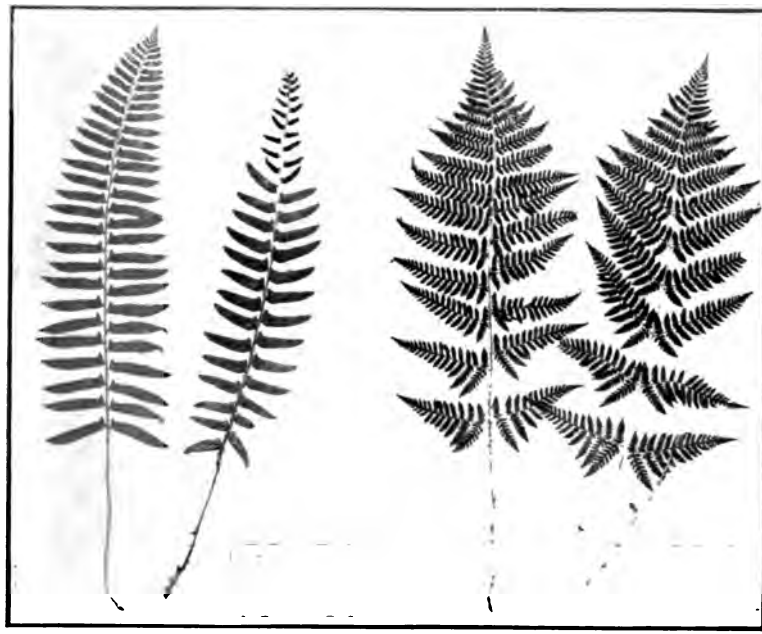
CHILDREN'S HERBARIUMS.

The quality of the children's herbarium work was quite equal to that of previous years. Nothing better than Dorothy Metcalf's and Dorothea Clapp's collection has been seen in our exhibitions. To quote from the "Transcript" notice: "Many of the specimens retain the original colors of the flowers to a degree of artistic as well as of botanical interest, as for example, the sabbatias, wood lilies, irises, sunflowers, roses, mallows, stargrass, cardinal flower and pickerel weed."

Many of the leaf sprays included the fruit of the tree and covered the sheets well. The fern specimens were large and complete as shown by the pictures.

In short, the quality of these collections especially was so good that the Committee decided to purchase quite a number of specimens as the nucleus of a botanical collection to be placed in the herbarium room for ready reference. The need of such a reference herbarium has been felt every year during the preparation of the exhibition and the naming of unnamed specimens.

And the fact that specimens may be considered worthy of being bought and added to the Society's herbarium will, no doubt, have a tendency to improve the quality of the work of every exhibitor; so that it is confidently expected that a useful and beautiful collection will be formed in the course of time.

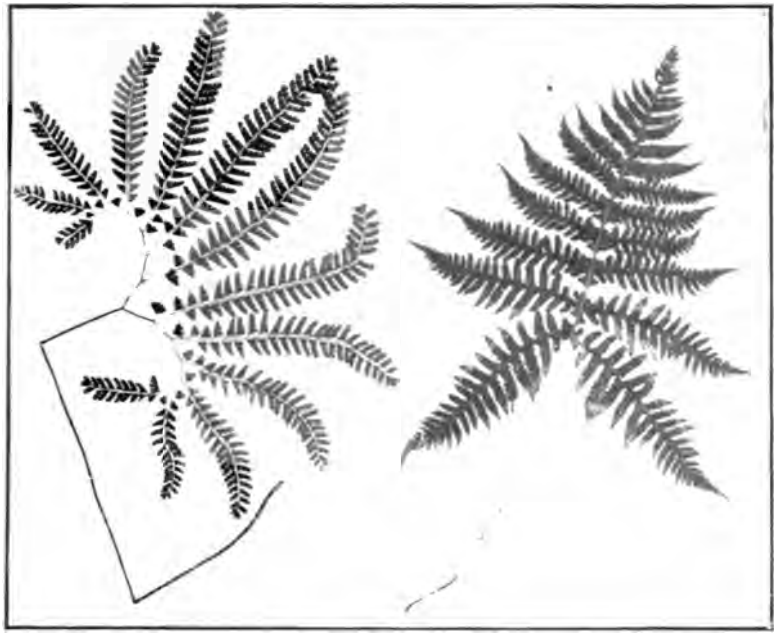


Christmas Fern. Spiny-Shield Fern.
Dorothy Metcalf's Herbarium.

The exhibition of fifty-four mosses correctly named by Christine Dudley Clapp was a new and valuable feature of this year's exhibition. Mosses are difficult things to determine anyway, and when the Society induces a school girl only sixteen years old to

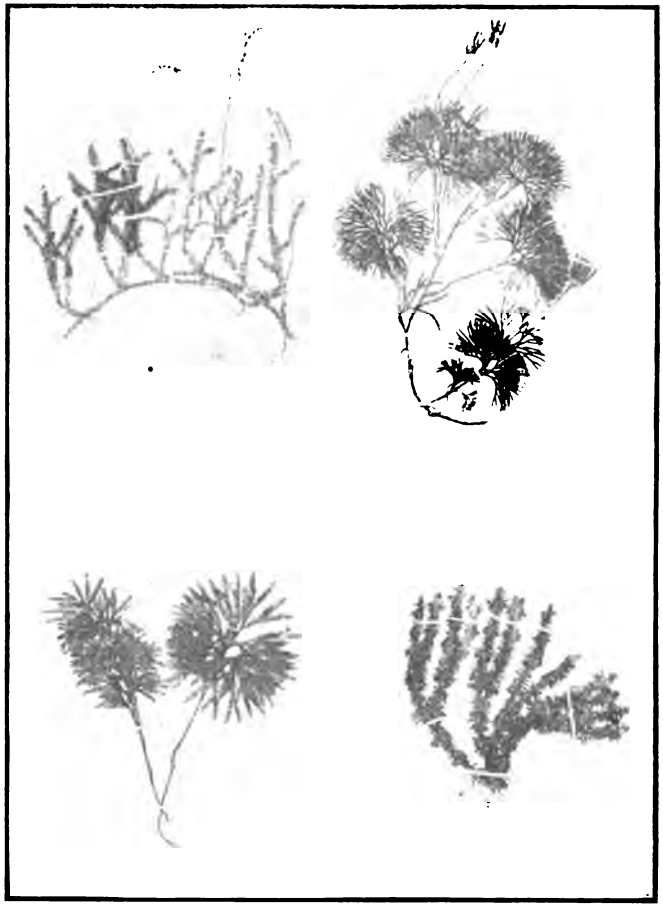
study up so well so difficult a subject as that of mosses and get together so fine a collection, it has done something of which it may well be proud. Such a starter as this frequently goes through the life and sweetens it continually.

The opportunity of putting such a collection on exhibition for hundreds of people to see, botanists included, is a great one, and it is hoped that more will take advantage of it, until mosses become as well known as flowering plants.



Maidenhair Fern. Phegopteris hexagonoptera.
Dorothy Metcalf's Herbarium.

Two members of this Society who have long been interested in mosses and have done very careful work in naming and exhibiting them examined this collection with evident pleasure, and disabilities of long continuance were forgotten in the added pleasure of the hour. This is surely one instance of sweetening the life to which reference has been made. And may there be many more!



Lycopodium clavatum. Lycopodium complanatum.
Lycopodium dendroideum. Lycopodium lucidulum.
Olive L. French's Herbarium.

Then there was another unusual exhibit, Miss Olive L. French's collection of lycopodiums, of which four are illustrated. This bringing together the different species of a genus for comparison is of great educational value. Agassiz declared there was only one proper method of study—the "*compariteef*"—and Miss Olive L. French has it.

Grass Pink. Large Blue Flag.
Linden. White Oak.
Dorothy Metcalf's Herbarium.

As noted in previous years, the family interest was shown again this year. The two Clapp girls exhibited specimens, and their small brother, Dudley, entered for the first time. There were three Swain boys, two Morss boys and two French girls among the exhibitors.

John Murdoch, Jr., now in Harvard College, exhibited over eighty new plants this year, although his contributions in previous years all told amounted to nearly six hundred different species.

Although only eighteen years old he is already a good botanist, thanks to the opportunities and encouragements offered here. On account of his botanical knowledge he graduated from the Roxbury Latin School with extra high marks, the writer being present on the occasion.

LEARNING TO INVESTIGATE.

The children of the Ira Allen Primary School, Boston, have been induced to find every different species of plant that grows in the adjoining field, and it is expected that the results of similar work next year will appear among the children's herbariums exhibited in our hall.

That is a phase of plant work which we have not noticed before among small children; and we shall be glad to encourage the thorough investigation of a certain area, no matter how limited, which was Darwin's characteristic way of working.

A GERMAN SCHOOL GARDEN.

A bit of the rock garden. Gera. Germany.

In Germany instruction on wild flowers and their cultivation is given quite as extensively as that on the kitchen garden. The botanic side of plants is considered quite as educative as the purely economic side.

The conditions for growing wild plants are much more varied than those for growing cultivated plants. There are wild plants that grow on Alpine heights, in watery marshes, deep woods, sand, cracks of rocks, and on other plants. The diverse conditions under which they grow furnishes a wide field of observation and learning.

A typical garden in furnishing varied conditions for growing over two thousand species of wild plants is located in Gera, Germany. Here all the children of the city come to observe and to receive instruction. It contains a spring from which flows a perennial stream.

The rock garden situated on an eminence is represented here by means of a reproduction from a photograph which I took in 1899. The area of the garden is a little less than an acre. A gardener and a director are regularly employed by the city to take care of it.

HORTICULTURE WITH NATIVE PLANTS.

Such gardens in Europe are very practical affairs. Our colleges have taught botany for many years, but not in the practical German method. However, if colleges all over the world have considered it of sufficient educational value to be entitled to a place in their curricula, there must certainly be such educational value in it as to command our respect and encouragement.

It is well to induce children to cultivate our native, hardy perennials as Mr. J. W. Manning, Rea Brothers, Mr. Horsford, Mrs. Wolcott and others have done. If they learn to love our native plants through their herbarium work no doubt some of them will desire to have them growing in their own gardens where they can see them easily and often.

Our public parks more and more are being adorned with our native plants and shrubs. One has only to walk through the Back Bay Fens, The Fenway, Franklin Park or the Arnold Arboretum to be convinced of that fact.

A large portion of our decorative plants grow wild somewhere,

and that fact is nothing against them. The Botanic Garden at Cambridge is a most lovely spot; and our native plants make it so. Just as fine are the botanic gardens in Europe which I have visited. They furnish the people with flower shows every day from early spring to late fall.

I have cultivated hardy perennials including asters, golden-rods, violets, ferns, wild bean, heleniums and others, far too numerous to mention, for more then a score of years, and they improve greatly under cultivation. I am sure that is horticulture. A great many men and women have done the same, and we desire the number should be increased, that their happiness may be made more certain.

Some seem to forget that happiness may be found in a garden regardless of the size of the flowers or their market value. To many the twin-flower is as pleasing as the rose, the mayflower as the dahlia, the violet as the chrysanthemum.

PRIZES AND GRATUITIES AWARDED FOR SCHOOL GARDENS AND CHILDREN'S HERBARIUMS.

SCHOOL GARDENS.

George Putnam School, Roxbury, first prize	$15 00

CHILDREN'S HERBARIUMS, NOVEMBER 28 AND 29, 1902.

FLOWERING PLANTS.

Gratuities:—

Dorothy Metcalf, for eighty-five additions to one hundred	3 40
John Murdoch, Jr., for sixty-three additions to four hundred and twenty-four	2 75
Marion L. French, for thirty-six additions to one hundred and forty-five	96
Robert D. Morss, for thirty additions to one hundred and seventy-five	84
Edward L. Morss, for twenty-five additions to one hundred and twenty-five	66
Olive L. French, for eighteen additions to two hundred and ninety-two	42

Donald N. Swain, for thirteen additions to twenty-five	$ 35
Winthrop C. Swain, for three additions to eighty-five	04

FERNS AND FERN ALLIES.

Gratuities:—

Dorothy Metcalf, for thirty-one ferns and seven fern allies	5 70
Dudley Clapp, for thirty-one ferns	3 72
Sara E. Snell, for twenty-seven ferns	3 24
Olive L. French, for ten ferns and eight fern allies	2 34
Bessie R. Parmenter, for twelve ferns	1 20

SEDGES.

Gratuities:—

John Murdoch, Jr., for fourteen additions to sixty-eight	1 68
Winthrop C Swain, for seven specimens	40

GRASSES.

Gratuities:—

John Murdoch, Jr., for twelve additions to forty-eight	1 20
Olive L. French, for four additions to fifty	50

SPRAYS OF LEAVES.

Gratuities:—

Dorothea Clapp, for fifty-one additions to thirty	5 10
Charles D. Swain, for thirteen specimens	91

MOSSES.

Gratuity:—

Christine Dudley Clapp, for fifty-four specimens	5 00
Total for Gardens and Herbariums	$40 41

The amount of money appropriated by the Society for the use of the Committee was:

For Prizes and Gratuities	$125 00	
For Current Expenses	75 00	$200 00
The Committee has expended		59 02
Balance unexpended		$140 98

HENRY L. CLAPP, *Chairman*, Roxbury,
MISS KATHARINE W. HUSTON, Roxbury,
WILLIAM P. RICH, Chelsea,
CHARLES W. JENKS, Bedford,
MRS. H. L. T. WOLCOTT, Dedham,
HENRY S. ADAMS, Boston,
W. E. C. RICH, *Secretary*,
99 Moreland Street, Roxbury, Mass.

Committee on School Gardens and Children's Herbariums.

REPORT

OF THE

COMMITTEE ON NATIVE PLANTS

FOR THE YEAR 1902.

By CHARLES W. JENKS, CHAIRMAN.

Collections of native plants were exhibited on the five days arranged in the schedule and all were marked by good displays, in fine condition, and well arranged. The exhibits were often so nearly equal in excellence that it was not easy to call one better than another, and your committee frequently found it difficult to determine the order of the awards. The increase from three to five prizes has worked well, and the limiting of the number of specimens of each species to three has, perhaps, lessened the effect as a display, but has in no way interfered with the botanical interest of the exhibits, and has shown the desire of the committee, as far as in its power, to discourage the unnecessary destruction of our native plants.

On May 10 were shown the usual early spring flowers.

On June 6 to 8, among others, were *Cypripedium spectabile*, *C. pubescens*, *C. parviflora*, *C. acaule*, *Liparis liliifolia*, *Arethusa bulbosa*, *Pogonia verticillata*, *Conopholis Americana*, and *Botrychium simplex*.

On July 12 were noted with interest, *Lysimachia stricta* var. *producta*, *L. vulgaris*, *L. punctata*, *Gnaphalium purpureum*, *Oenothera biennis* var. *cruciata*, *Rhododendron maximum*, and *Lobelia Dortmanna*.

On July 19, for the prizes for native ferns, three collections were offered, and all were representatives of our native species and creditable to the exhibitors. While there were no rare specimens there were many of interest, among which may be mentioned the following: Mrs. Clark had an unusual form of *Asplenium Filix-foemina* with finely laciniate fronds somewhat resembling some of the English cut varieties; fine specimens of *Phegopteris hexagonoptera*, cultivated in garden; *Ophioglossum vulgatum*, called rare, but better described as common but rarely observed. Mr. C. C. Kingman exhibited four *Botrychiums*, *matricariæfolium*, *ternatum*, *ternatum* var. *dissectum*, and *Virginianum;* the form of *Onoclea* called *obtusilobata;* some peculiar forms of *Asplenium Filix-foemina;* and *Asplenium angustifolium* cultivated in garden. The Misses Doran had a collection neatly arranged and in fine condition in which was *Aspidium Goldianum* cultivated in garden, and a form which came close to *Aspidium cristatum* × *marginale*. Mr. George E. Davenport kindly assisted the committee and his thorough knowledge of the species was of great assistance to them.

There were no exhibits for the prizes offered for cultivated native plants.

On August 2 the Misses Robbins of Cambridge had an interesting exhibit of our common roadside plants and weeds. In the other collections were *Habenaria blephariglottis*, *H. orbiculata*, *H. tridentata*, *H. psycodes*, *H. lacera*, *H. ciliaris*, *Microstylis ophioglossoides*, *Monarda didyma*, *M. clinopodia*, *M. fistulosa*, var. *rubra*, *Utricularia inflata*, *U. purpurea*, *U. vulgaris*, *U. cornuta*, and *U. gibba*.

On September 11, the last prize day of the season, there were brought a large collection of asters and goldenrods, and some excellent specimens of native plant fruits of which Miss Mann exhibited twelve species.

The committee are well pleased with the exhibits offered and hope next season that there will be more plants shown on days when no prizes are offered, as was the custom formerly. These displays of native plants are a marked feature of our exhibitions and the interest felt in them is shown by the large number of per-

sons, both old and young, who gather around them to recognize an old acquaintance or to obtain the name of some new friend.

The committee, while not desiring to enter into the question of nomenclature, have felt that they should have some standard and for the present, as their rules for 1903 show, have decided on Gray's Manual.

PRIZES AWARDED FOR NATIVE PLANTS.

1902.

MAY 10.

NATIVE PLANTS.—Collection of thirty bottles of named species and varieties, one bottle of each:

1st, Mrs. Arthur Clark, $5; 2d, Mrs. W. S. Eager, $4; 3d, Misses E. A. and M. S. Doran, $3.

JUNE 7. (*Changed from June 6, 7 and 8.*)

NATIVE PLANTS.—Collection of thirty bottles of named species and varieties, one bottle of each:

1st, Mrs. W. S. Eager, $5; 2d, Mrs. Arthur Clark, $4; 3d, Miss R. L. Mann, $3.

JULY 12.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:

1st, Mrs. Arthur Clark, $5; 2d, Misses E. A. and M. S. Doran, $4; 3d, Edward S. Colburn, $3; 4th, Miss R. L. Mann, $2.

JULY 19.

NATIVE FERNS. Collection of named species and varieties:

1st, Mrs. Arthur Clark, $6; 2d, C. C. Kingman, $5; 3d, Misses E. A. and M. S. Doran, $4.

AUGUST 2.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:

1st, Mrs. Arthur Clark, $5; 2d, Mrs. W. S. Eager, $4; 3d, Misses E. A. and M. S. Doran, $3; 4th, Miss R. L. Mann, $2; 5th, Edward S. Colburn, $1.

SEPTEMBER 11, 12, 13 AND 14.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:

1st, Mrs. Arthur Clark, $5; 2d, Edward S. Colburn, $4; 3d, Mrs. W. S. Eager, $3; 4th, Miss R. L. Mann, $2; 5th, Misses E. A. and M. S. Doran, $1.

Appleton Silver Medal awarded to Mrs. Arthur Clark for the greatest number of first prizes for Native Plants.

Appleton Bronze Medal awarded to Mrs. W. S. Eager for the next greatest number of first prizes for Native Plants.

Amount appropriated for the use of the Committee		$175.00
Amount of Prizes	$83.00	
Cost of Medals	10.52	93.52
Balance unexpended		$81.48

CHARLES W. JENKS,
WILLIAM P. RICH,
MISS MARY RODMAN,
Committee on Native Plants.

REPORT

OF THE

COMMITTEE ON FORESTRY AND ROADSIDE IMPROVEMENT

FOR THE YEAR 1902.

By JAMES STURGIS PRAY, SECRETARY.

To the President and Members of the Massachusetts Horticultural Society:—

The Committee on Forestry and Roadside Improvement respectfully report:

The principal work of the committee during the past year has been the carrying on of that referred to in our previous reports; namely,—the collecting, collating and tabulating of information regarding the distribution and condition of our roadside trees throughout the Commonwealth, with a view to publishing a report of these conditions, coupled with recommendations to the tree wardens and others having to do with the preservation and increase of the arboreal beauty of our roadsides. To this end we have again sent out copies of our original roadside circular, containing the series of specific inquiries, to all the tree wardens in the towns, and to the city foresters and others in the cities; and in this way have added substantially to the mass of statistical data already in hand. Meanwhile the arrangement of one part of this information has been finished, being divided under such heads as,—Record of replies; Work done; Condition of trees; Soils; Diseases and pests; Tree-guards; Effects of electric wires, gas,

and pavements; Placards; Noteworthy individual trees; Real estate values; Arbor Day; Work in the schools; Town by-laws; Inquiries; etc. The tabulation of the other part of our accumulated information is rapidly nearing completion, as is also the mapping of the latter in a way to indicate graphically the distribution of species. It was in connection with this latter work that reference was made in a previous report to the relation which the work of this committee had to that of the Division of Biological Survey of the United States Department of Agriculture. Although the Secretary of the committee, who has been carrying on this work, is no longer able to give to it so much time as heretofore, he hopes to be able to submit, in behalf of the committee, to the Society before spring, the long promised report on all the material, in order that it may be printed, if the Society shall see fit, in season for circulation to the tree wardens, members of the Society, and others, early in April.

Whatever value may come out of this report, the more important work for the committee has been the correspondence with the tree wardens and others, and the helping them constantly with information and advice; and the committee believes that this good work should not be allowed to lapse through any inadequacy of appropriations.

In this connection, it may be well to state, in view of possible misunderstanding, that our committee is in closest sympathetic relation with the Massachusetts Forestry Association. On the one hand, so far as it is plowing the same field, the two are coöperating, and there is more than ample field for both. On the other hand, a large share of the work of this committee is entirely distinct from and unlike anything that the Massachusetts Forestry Association has as yet undertaken. As an instance of the coöperation above referred to, and a proof of the value of the existence of a Committee on Forestry, separate from the Massachusetts Forestry Association, we may refer to the several occasions when a cause espoused in common by the two, has been supported at the State House by the representatives of both; a bill originating with the Massachusetts Forestry Association receiving proportionately more consideration by having the united support of that Association, this Society (through its committee), the Board of

Agriculture, and the Appalachian Mountain Club. It is often true, as has been conspicuously the case in the relations of our committee, that a number of independent but closely allied and coöperating organizations can, working together, wield a larger power than if united under one government.

In conclusion, we have only further to report at this time, and as additional instances of useful coöperation, that during the past year we have continued to use such opportunities as have offered for the distribution of the circulars of the Society for the Protection of Native Plants, and the American Park and Outdoor Art Association; and have taken part in the reception and entertainment of the latter Association on the occasion of its annual convention held last August in Boston, when the hospitality of our Society was so freely shown it.

Respectfully submitted for the Committee,

HARVEY N. SHEPARD, *Chairman*,
JAMES STURGIS PRAY, *Secretary*,
NATHANIEL S. SHALER,
HENRY S. HUNNEWELL,
J. WOODWARD MANNING,

Committee on Forestry and Roadside Improvement.

REPORT

OF THE

COMMITTEE OF ARRANGEMENTS

FOR THE YEAR 1902.

By JOSEPH H. WOODFORD, CHAIRMAN.

As the year draws to a close we can look back with considerable satisfaction at the result of our endeavors to make the exhibitions attractive and fully appreciated by the multitudes of people who have attended them.

The Schedule of Prizes called for about the same number of exhibitions as are usually held during the year and some of them have taxed the halls to their utmost capacity to contain them; and in some instances considerable ingenuity had to be resorted to to accommodate the great number of exhibitors.

The arrangements have been carefully planned and so well carried out that everything done by the committee has met with the approval of the exhibitors and has redounded to the credit of the Society.

We are much pleased with the copious notices of our exhibitions in the newspapers and now wish to thank the reporters for taking so much pains for the benefit of our Society. The appropriation placed to the credit of this committee for extraordinary expenses has been expended judiciously and for the best interests of our exhibitions.

The amounts received for admission fees to the three Shows, for which an entrance fee was charged, were as follows:

Spring Show, March	$771.00
Plant and Flower Show, September . . .	826.25
Chrysanthemum Show, November . . .	1,092.50
	$2,689.75

all of which is in the hands of the Treasurer.

Respectfully submitted,

JOSEPH H. WOODFORD,
ARTHUR H. FEWKES,
J. WOODWARD MANNING,
E. W. WOOD,
WARREN H. HEUSTIS,
PATRICK NORTON,
ROBERT FARQUHAR,

Committee of Arrangements.

REPORT OF DELEGATE

TO THE

STATE BOARD OF AGRICULTURE

FOR THE YEAR 1902.

When one visits the Hatch Experiment Station at Amherst, he really wonders if the farmers and gardeners of the Commonwealth realize the importance of the work carried on in their interests. There are trained professors whose daily business is special investigation in the various departments of agriculture and horticulture; in the latter we are, perhaps, more especially interested. The work is done on a scale of sufficient magnitude to present the subject in all practical ways, and the products are large enough to insure of keeping in prompt touch with the market quotations.

There the cultivator finds the meat of the nut cracked for him; there he can find the best apples, pears, peaches, plums, and small fruits of all kinds. The directing professor can give lists of the most profitable varieties for the market or for family use.

Last summer the Trustees of the College made a change in the horticultural professorship, Prof. F. A. Waugh taking the place of Prof. Maynard. We remember the latter pleasantly in connection with several lectures with which he has favored this Society, as well as his exhibitions of fruits in illustration of some of his experiments.

The Hatch Experiment Station is well worth what it costs the state and the nation for its support.

This has been a year of commemoration to the State Board of Agriculture, which was established in 1852, and consequently has now attained its semi-centennial, which was celebrated by a meeting in our Halls on July 22. Invitations were extended to all past and present members of the Board, also to the Governors of the New England States, and to the Secretary of the Department of Agriculture at Washington.

The venerable Ex-Governor Boutwell, who was in office at the time of the establishment of the Board, and who was one of its most cordial promotors, was present and addressed the meeting.

His Honor Lieut.-Governor Bates spoke for the Commonwealth, and a representative from the Department of Agriculture also spoke.

Dr. Goodell, President of the Agricultural College at Amherst, gave an exceedingly interesting historical address, and President O. B. Hadwen, of this Society, entertained the meeting with personal reminiscences of his membership in the Board.

The exercises closed with a collation in the smaller hall at which a large number participated.

WILLIAM H. SPOONER,
Delegate.

December 1, 1902.

REPORT OF THE INSPECTOR

TO THE

STATE BOARD OF AGRICULTURE

FOR THE YEAR 1902.

To the State Board of Agriculture,

GENTLEMEN :—The duty you have assigned to me of inspection of exhibitions of the Massachusetts Horticultural Society is agreeable, and easy by comparison. There is indeed no comparison to make, as the high position of that Society in consequence of position in the state, and, indeed, in this nation, and beyond, is so elevated that what it has done, and is doing, can only be much praised. Comparisons with this Society can be best and only, perhaps, made with itself. Its management is acting under its existing rules of government, and the responsibility for keeping these rules in the most advanced condition has been placed by the state upon its members. The state gave it a Constitution in the Acts of Incorporation passed in the year 1829, and the power to make by-laws rests with the Society. It has done a noble work in the promotion of Massachusetts Horticulture; and it must succeed, and advance in wealth and horticultural promotion, so long as our citizens of wealth, and practical knowledge in matters given to its care, continue to have a united confidence that those sterling ideas which its founders held are unselfishly perpetuated.

We can safely record the facts that its several exhibitions within its new Halls, with its fine library accommodations adjoining, have deserved high commendation during the year.

FRANCIS H. APPLETON,

Inspector.

REPORT

OF THE

COMMITTEE ON LECTURES AND PUBLICATION

FOR THE YEAR 1902.

By AARON LOW, CHAIRMAN.

The Committee on Lectures and Publication presents the following summary of its work for 1902:

A course of nine lectures has been delivered, as follows:

January 11. The Brown-Tail Moth in Massachusetts. By A. H. Kirkland, M. S.

January 18. Horticultural Possibilities for New England Farms. By Prof. F. Wm. Rane.

January 25. The Business End of Horticulture. By Patrick O'Mara.

February 8. The Methods and Results of Soil Sterilization. By Prof. G. E. Stone.

February 15. Fungous Diseases of Fruits. By Prof. M. B. Waite.

March 8. The Influence of American Expositions on the Out-Door Arts. By Warren H. Manning.

March 15. The Evolution of Vegetable Culture during the last Forty Years. By Warren W. Rawson.

March 22. Birds and Insects in their Relation to Agriculture. By E. H. Forbush.

March 29. Some Famous Gardens of the World. By Miss Helena T. Goessmann.

The Schedule of Prizes for 1902 was issued January 17.

The Transactions for 1901, Part I, was issued July 1, and that for 1901, Part II, on October 27.

Part III of the Transactions for 1897 containing the accessions to the library for that year is now being printed.

AARON LOW,
JAMES H. BOWDITCH,
E. W. WOOD,
Committee.

REPORT

OF THE

COMMITTEE ON THE LIBRARY

FOR THE YEAR 1902.

By WALTER S. PARKER, CHAIRMAN.

The Library Committee, in accordance with custom and the rules of the Society, respectfully submits the following report:

The committee desires to call the attention of every member of the Society to the beautiful and spacious rooms in which the library is now located. In many particulars they are all that could be desired, and especially is this true of the large, main hall. The light is excellent, the floor space ample, and the general architectural effect is very pleasing. It is a very fine room, withal, for a consulting library, and it seems unnecessary to add that it contains many rare and valuable books.

It is absolutely necessary, however, that some alterations be made in the large room, in order that it may meet the ends for which all libraries are instituted; namely,—first, the safe storage of books; second, a positive encouragement to the readers for the continued use of the books. Books are made for the purpose of being read and consulted, and every encouragement should be given to the patrons of the library. It is unfortunate that the shelves are all of uniform width (eight inches), and, in order to properly care for the large books and folios, it will be necessary to make some alterations.

Two methods have been considered by the Library Committee, either one of which will increase the efficiency of the library, and

make it of greater use to the members of the Society. In one plan it is proposed to enlarge the lower shelves by building out the cases, thus making a greater depth of shelf for the accommodation of the large books and folios. The architect has expressed the opinion that this can be done without injuring the present pleasing architectural effect. The Library Committee, after carefully considering the matter, is inclined to favor this plan.

The other plan mentioned, and considered somewhat, is to keep the cases and shelves as they are at present, and to construct low, double-faced cases, to be placed in the centre of each alcove, thus making them serve the double purpose of bookcase and table. This latter plan, we understand, was the original idea suggested when the arrangement of the library was first under consideration. It is in some ways better than the first plan mentioned, and, if adopted, will not change the present architectural effect of the room.

Your committee is emphatically of the opinion that no change should be made in the library without first consulting the architect, and getting plans which will harmonize with the general proportion of the present interior furnishings of the room. We earnestly hope that the financial condition of the Society will warrant the Executive Committee in granting such sums as will enable these changes to be made.

We are sorry to record the resignation of the former chairman of the Library Committee, Mr. William E. Endicott, a gentleman who, by education and natural endowments, was especially adapted to the work of the Society. He was widely read in many departments of horticulture and was practically engaged in the culture of various plants and shrubs on his home place, thereby making his judgment especially valuable in the selection of books for the library. He has served for twenty-three years as chairman of this committee and has done most excellent work for the Society, and it is with deep regret that we record his resignation.

We add herewith a list of the books worthy of special mention, received during the past year.

The seventh edition of Miller's Gardeners Dictionary; a 1517 edition of the Ortus Sanitatis; the first edition, 1664, of Evelyn's Sylva; Vol. II of the Botany of Captain Cook's Voyage; Delile's Flore D'Égypte (the botanical portion of Bonaparte's Égypte); Sanders' Orchid Guide (a useful reference book); American Gardens, by Lowell; Henderson's Picturesque Gardens; Gifford's Practical Forestry; Schwarz's Forest Trees and Forest Scenery; Charles Eliot, Landscape Gardener; Campbell's University Textbook of Botany; Britton's Manual of the Flora of the Northern States and Canada; Earle's Sun-dials and Roses of Yesterday.

Some of the books of a popular nature are Annie Oakes Huntington's Studies of Trees in Winter; the Handbook of the Trees of New England, by Dame and Brooks; a new edition of Frances Theodora Parsons' According to Season; F. Schuyler Mathews' Field Book of American Wild Flowers; Alice Lounsberry's Southern Wild Flowers and Trees; Cook's Trees and Shrubs for English Gardens; Jekyll and Mawley's Roses for English Gardens; Boyle's Woodlands Orchids; and Grout's Mosses with a Hand-lens.

We are glad to note the completion, after many years, of Pierre's Flore forestière de la Cochinchine, and Cesati, Passerini and Gibelli's Compendio della Flora Italiana. The concluding volumes of Professor Sargent's great work, The Silva of North America, have been received and also the fourth and last volume of Professor Bailey's Cyclopedia of American Horticulture. Besides these we have received continuations of Braithwaite's British Moss-Flora; Cogniaux and Goossen's Dictionnaire Iconographique des Orchidées; Collins, Holden and Setchell's Phycotheca Boreali-Americana; Flora Batava; Reichenbach's Icones Florae Germanicae et Helveticae; the second edition of Rabenhorst's Kryptogamen-Flora von Deutschland, Oesterreich und der Schweiz; Urban's Symbolae Antillanae; the Catalogue of Welwitsch's African Plants; Thiselton-Dyer's Flora of Tropical Africa; Hooker's Icones Plantarum; Bubani's Flora Pyrenaea; Triggs' Formal Gardens in England and Scotland; and Annals of the Royal Botanic Garden, Calcutta.

Monographia Aquifoliacearum, Part I, by Loesener; Monographia Loasacearum, by Urban; and Studien über die Gattung Platanus have been presented by the Kaiserlich-Leopoldinisch-Carolinische Deutsche Akademie der Naturforscher, Halle.

WALTER S. PARKER,
GEORGE E. DAVENPORT,
CHARLES W. SWAN,
CHARLES W. JENKS,
T. OTIS FULLER,
Library Committee.

REPORT

OF THE

SECRETARY AND LIBRARIAN

FOR THE YEAR 1902.

The hand that for twenty-five consecutive years has prepared the Annual Report of the Secretary and Librarian has dropped its busy pen and the active brain that guided it has ceased its labor. Suddenly upon the morning of the seventeenth of February of the present year, Robert Manning was gathered into the harvest of the eternal years. In another place will be recorded a fitting tribute to his memory and a biographical sketch of his long and fruitful life.

Upon the death of Mr. Manning the duties of these offices were performed under the direction of Mr. Nathaniel T. Kidder, of the Executive Committee, until July first, at which time the present Secretary and Librarian was appointed.

Notwithstanding the vicissitudes of the year, work on the publications of the Society has been steadily maintained, with the result that Part I of the Transactions for 1901, which had been edited by Mr. Manning, has been issued, as well as Part II of the same year, mostly prepared by Miss Charlotte M. Endicott and Miss Mary C. Hewett, the efficient assistants in the library. Part I of 1902 is now being printed and will be ready for distribution at an early date.

Work on the long delayed Part III of the Transactions, comprising the accessions to the library, has been renewed and an effort will be made to bring these issues up to date as quickly as possible. Part III of 1897 is now in press. It is hoped in the

near future to incorporate the accessions with the current volumes of the Transactions, thereby discontinuing the third part, and rendering more promptly available the resources of the library.

While the valuable library of the Society is now handsomely established in its new and spacious halls, there remain some changes to be made in order that its usefulness may be increased and its accessibility rendered more convenient. Happily the problem of lack of shelf room which was for so many years the theme of discussion in this annual report has been now solved, but a new problem has arisen to take its place.

The work of final arrangement, the numbering of the shelves, and the cataloguing of the books have been greatly delayed by reason of the lack of proper shelving and the consequent uncertainty as to the disposition of the folios and quartos which constitute a large proportion of our volumes.

Fortunately, however, this problem is one of easier solution and a plan has already been adopted by the Library Committee by which this defect may be remedied. It is to be hoped that through the liberality of the Society the necessary means may be soon furnished whereby this improvement may be made and the library brought into a condition which its importance demands. The Librarian cannot too strongly urge the necessity of an early carrying into effect of this recommendation.

Through a special appropriation by the Society we have been enabled to add two new and improved card-catalogue cabinets, and a gift of $123.61 from the Building Committee will be expended for similar purposes, thereby adding to the convenience of all frequenters of the library.

Current standard publications of horticultural and botanical interest have been added to the library as promptly as possible and a partial list of some of the more noteworthy ones is appended to the report of the Library Committee. A collection of agricultural and horticultural books from the library of the late James F. C. Hyde has been presented by Mrs. Hyde and contains many desirable additions to the library.

While not as many books have been taken from the library as in some previous years, its use for the purposes of reference and special study appears to have increased, and inquiries by mail from correspondents throughout the country on questions and subjects of horticultural and botanical interest are frequently received. The Secretary and Librarian and his assistants are always ready to render the resources of the library as helpful as possible to all interested inquirers.

The list of horticultural, agricultural and botanical journals of the world's best publications has been fully maintained and with all these valuable advantages and with the beautiful, well-lighted and spacious library room it would seem that the library should be of even greater service in the future than it has been in the past.

WILLIAM P. RICH,
Secretary and Librarian.

TREASURER'S REPORT

FOR THE YEAR 1902.

MASSACHUSETTS HORTICULTURAL SOCIETY, *in account, current with* CHARLES E. RICHARDSON, *December 31st, 1902.*

DR.

To amount paid on account of New Building . . .			$175 00
" " " for Furniture and Exhibition Ware . .			93 39
" " " " Library, appropriated by Society	$400 00		
" " " from income of J. S. Farlow Fund	127 49		
" " " from income of J. D. Williams French Fund . . .	200 75		
		———	728 24
" " " Interest on funds for Prizes, credited opposite			2,051 79
" " " L. J. Hunt, guardian			6,585 81
" " " for Heating	$1,651 68		
" " " " Lighting	699 96		
" " " " Water Rates	105 00		
" " " " Labor	2,627 48		
" " " " Stationery, Printing and Postage	2,042 46		
" " " " Insurance	3,476 60		
" " " " Incidentals	1,017 75		
" " " " Repairs	201 55		
" " " " Committee of Arrangements,	300 00		
" " " " " on School Gardens and Children's Herbariums	18 61		
" " " " Committee on Lectures and Publications . . .	229 00		
Amounts carried forward . . .	$12,370 09		$9,634 23

Amounts brought forward	$12,370 09	$9,634 23
To amount paid for Committee on Forestry and Roadside Improvement .	$147 38	
" " " for Salaries of Treasurer, Secretary and Assistants . .	4,300 00	
" " " " Salaries of Committees .	1,043 00	
" " " " Tax on South Boston Property	139 12	
" " " " Electric Power . . .	348 15	
" " " " ⅔ Share of General Electric Stock	122 00	
" " " Alice M. Hobson, services in Library	75 01	
" " " for Legal Services . . .	100 00	
" " " American Park and Out-Door Art Association . .	100 00	
		18,744 75
" " " for Prizes awarded in 1901, viz.:		
H. H. Hunnewell, Triennial Prize . .	$160 00	
Prizes for Plants	1,287 50	
" " Flowers	1,039 02	
" " Fruit	653 00	
" " Vegetables	564 65	
" " Gardens and Greenhouses . .	415 00	
" " School Gardens and Children's Herbariums	83 75	
		4,202 92
		$32,581 90
Balance December 31, 1902		17,648 55
		$50,230 45

CR

By Balance of account rendered December 31, 1901 . .		$26,481 72
" Received from Building in 1902, use of Halls,	$3,905 00	
" " " Annual Exhibitions, Gross . . . $2,689 75		
Less Expenses, 1,700 65		
	989 10	
" " " Admissions and Assessments .	1,498 00	
" " " Mount Auburn Cemetery . .	3,307 90	
" " " State Bounty	600 00	
Amounts carried forward	$10,300 00	$26,481 72

Amounts brought forward		$10,300 00	$26,481 72
By Received from Sale of Transactions . .		3 50	
" " " Interest on Bonds .	$9,836 67		
" " " " " Stock .	610 00		
" " " " " Deposits in Bank . .	444 70		
	$10,891 37		
Less paid L. J. Hunt, Guardian,	448 93		
		10,442 44	
By Received from Estate of Benjamin H. Pierce, for Fund		800 00	
" " " Sale of ⅓ Share General Electric Stock		101 00	
" " " Edward Hatch, for Special Prize		50 00	
" Interest credited following Funds charged opposite:			
Samuel Appleton Fund .	$50 00		
John A. Lowell " .	50 00		
Theodore Lyman " .	550 00		
Josiah Bradlee " .	50 00		
Benjamin V. French " .	25 00		
H. H. Hunnewell " .	200 00		
W. J. Walker " .	117 72		
Levi Whitcomb " .	25 00		
Benjamin B. Davis " .	25 00		
Marshall P. Wilder " .	50 00		
John Lewis Russell " .	50 00		
Francis Brown Hayes " .	500 00		
Henry A. Gane " .	50 00		
John S. Farlow " .	100 00		
J. D. Williams French " .	200 00		
Benjamin H. Pierce " .	9 07		
		2,051 79	
			23,748 73
			$50,230 45

CHAS. E. RICHARDSON,
Treasurer.

Approved:

WALTER HUNNEWELL,
ARTHUR F. ESTABROOK,
O. B. HADWEN,
} *Finance Committee.*

AUDITOR'S CERTIFICATE.

28 State Street, Boston, March 3d, 1903.

To the Finance Committee of the
Massachusetts Horticultural Society.

Gentlemen :—In compliance with your request I made a thorough audit of the books and general accounting affairs of the Massachusetts Horticultural Society for the year which ended with the 31st day of December, 1902, and herewith hand you my report of the same.

Report.

I added the ledger, journal and cash book and the small books tributary to the cash book and saw that all balances were correctly carried forward. I examined and checked the vouchers representing the disbursements during the year and found the amount of cash required by the cash book upon the first day of January, 1903, to have been on hand, and also examined the securities of the Society in the custody of the Treasurer and found that they were in all instances in accordance with the requirements of the record. I traced all postings from the journal and cash book into the ledger and proved the correctness of the balance sheet taken from the ledger as of the 31st day of December, 1902, which is a true statement of the financial condition of the Society upon said date, to the best of my knowledge and belief.

In short, I satisfied myself that the work in connection with the accounting affairs of the Society was being conscientiously and honestly performed, and that there was every evidence of faithfulness upon the part of the Treasurer.

Yours very respectfully,

ANDREW STEWART,
Examiner of Accounts.

ASSETS AND LIABILITIES.

DECEMBER 31, 1902.

ASSETS.

Real Estate	$516,172 36	
Furniture and Exhibition Ware	8,250 54	
Library	41,301 62	
Stereotype Plates and Copies of History	246 50	
$1,000, Chicago, Burlington & Quincy, 7 % R. R. Bonds, Cost	1,000 00	
$2,000, Kansas City, Clinton & Springfield 5% R. R. Bonds, Cost	1,980 00	
$10,000, Lake Shore & Michigan Southern 3½ % R. R. Bonds, Cost	10,415 25	
$21,000, City of Newton 4 % Bonds, Cost	24,228 75	
$50,000, Atchison, Topeka & Santa Fe 4 % R. R. Bonds, Cost	44,693 25	
$50,000, Chicago, Burlington & Quincy, Nebraska Extension 4 % Bonds, Cost	50,012 50	
$10,000, Chicago & West Michigan 5 % R. R. Bonds, Cost	9,987 50	
$25,000, Kansas City, Fort Scott & Memphis 6 % Consols, Cost	27,523 75	
$50,000, Chicago, Burlington & Quincy, Illinois Division, 3½ % R. R. Bonds, Cost	51,625 00	
$8,000, Boston & Maine 4½ % R. R. Bonds, Cost	8,710 00	
$5,000, West End Street Ry. Co. 4½ % Bonds, Cost	5,162 50	
General Electric Co., 139 Shares of Stock, Cost	10,082 00	
W. A. Hayes & A. P. Loring, Trustees	3,488 76	
Cash	17,648 55	
		$832,528 83

LIABILITIES.

Prize and other Funds invested in Bonds:

Samuel Appleton	Fund,	$1,000 00	
John A. Lowell	"	1,000 00	
Theodore Lyman	"	11,000 00	
			$13,000 00
Amount carried forward			$13,000 00

Amount brought forward			$13,000 00	
Josiah Bradlee	Fund	$1,000 00		
Benjamin V. French	"	500 00		
H. H. Hunnewell	"	4,000 00		
W. J. Walker	"	2,354 43		
Levi Whitcomb	"	500 00		
Benjamin B. Davis	"	500 00		
Marshall P. Wilder	"	1,000 00		
John Lewis Russell	"	1,000 00		
Francis Brown Hayes	"	10,000 00		
Henry A. Gane	"	1,000 00		
John S. Farlow	"	2,501 92		
J. D. Williams French	"	5,000 29		
Benjamin H. Pierce	"	800 00		
			$43,156 64	
Prizes for 1902 payable in 1903			8,250 00	
				$ 51,406 64
Surplus				781,122 19
				$832,528 83

C. E. RICHARDSON,
Treasurer.

MEMBERSHIP OF THE MASSACHUSETTS HORTICULTURAL SOCIETY, DECEMBER 31st, 1902.

Life Membership per last report		686	
Added in 1902		28	
Commuted from Annual		5	
		719	
Deceased		25	
			694
Annual Membership per last report		184	
Added in 1902		21	
		205	
Commuted to Life		5	
Deceased		3	
Resigned		1	
Dropped for non-payment for two years		7	
		16	
			189
Present Membership			883

INCOME FROM MEMBERSHIP.

28 new Life Members @ $30	$840 00
5 Commuted to Life @ $20	100 00
21 new Annual Members @ $10	210 00
Assessments	348 00
	$1,498 00

CHAS. E. RICHARDSON,
Treasurer.

Dr. *Massachusetts Horticultural Society in account with the Proprietors of the Cemetery of Mount Auburn.* **Cr.**

For Sales and Improvements within the Cemetery during the year ending December 31st, 1902.

To cost of filling up and improving land at Mount Auburn for the year ending December 31st, 1902, the Massachusetts Horticultural Society being charged with their proportion of same:			By Sales in January	$40 00	
Rear Walnut Avenue and Fern and Violet Path	$285 38		" " " April	1,192 00	
Between Cherry and Magnolia Avenues	283 96		" " " May	2,820 00	
Glen Avenue	36 75		" " " June	1,916 00	
	$606 09		" " " July	3,274 00	
			" " " August	564 20	
			" " " September	1,668 00	
			" " " October	2,280 50	
			" " " November	480 00	
			" " " December	20 00	
				$14,254 70	
			Net amount received from Receiving Tomb	1,043 00	
				$15,297 70	
			Less graves repurchased	60 00	
				$15,237 70	
			Deduct for Annual Expenses	1,400 00	
				$13,837 70	
One-fourth part of $606.09	$151 52				
Balance due Mass. Horticultural Society,	3,307 90				
		$3,459 42	One-fourth of $13,837.70 is		$3,459 42

E. & O. E.

JOHN L. DILL, *Treasurer.*

Boston, December 31st, 1902.

THE MASSACHUSETTS HORTICULTURAL SOCIETY

To the PROPRIETORS OF THE CEMETERY OF MOUNT AUBURN. *Dr.*

To cost of filling up and improving land at Mount Auburn for the year ending December 31st, 1902, the Massachusetts Horticultural Society being charged with their proportion of same.

Rear Walnut Avenue and Fern and Violet Path.

24.5 days, man and horse	$ 91 88	
86 days, man	193 50	
		$285 38

Between Cherry and Magnolia Avenue.

41.1 days, man and horse	$154 13	
8.4 days, man and horse	31 50	
3 days, man and horse	15 75	
36.7 days, man	82 58	
		283 96

Glen Avenue.

9.8 days, man and horse	36 75
	$606 09
One-fourth of $606.09	$151 52

[Signed] JAMES C. SCORGIE,
Supt. of the Cemetery of Mount Auburn.

MOUNT AUBURN, December 31, 1902.

I certify the foregoing to be a true copy of the improvements for the year 1902 rendered by the Superintendent.

[Signed] JOHN L. DILL,
Treasurer.

Massachusetts Horticultural Society.

OFFICERS AND STANDING COMMITTEES FOR 1903.

President.

O. B. HADWEN, of Worcester.

Vice-Presidents.

BENJAMIN P. WARE, of Clifton.
SAMUEL HOAR, of Concord.
JOSEPH R. LEESON, of Newton Centre.
OAKES AMES, of North Easton.

Treasurer and Superintendent of the Building.

CHARLES E. RICHARDSON, of Brookline.

Secretary and Librarian.

WILLIAM P. RICH, of Chelsea.*

Professor of Botany and Vegetable Physiology.

BENJAMIN M. WATSON, of Jamaica Plain.

Professor of Entomology.

SAMUEL H. SCUDDER, of Cambridge.

Delegate to the State Board of Agriculture.

WILLIAM H. SPOONER, of Jamaica Plain.

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* Communications to the Secretary, on the business of the Society, should be addressed to him at Horticultural Hall, Boston.

STANDING COMMITTEES.

Executive.

THE PRESIDENT, O. B. HADWEN, CHAIRMAN.
THE CHAIRMAN OF THE FINANCE COMMITTEE, WALTER HUNNEWELL, *Ex officio.*
WILLIAM C. STRONG. FRANCIS H. APPLETON.
WILLIAM H. SPOONER. BENJAMIN C. CLARK.
NATHANIEL T. KIDDER. CHARLES W. PARKER.
CHARLES F. CURTIS.

Finance.

WALTER HUNNEWELL, OF BOSTON, CHAIRMAN.
O. B. HADWEN. ARTHUR F. ESTABROOK.

Lectures and Publication.

AARON LOW, OF HINGHAM, CHAIRMAN.
JAMES H. BOWDITCH. E. W. WOOD

Library.

WALTER S. PARKER, OF READING, CHAIRMAN.
GEORGE E. DAVENPORT. CHARLES W. JENKS.
CHARLES W. SWAN. T. OTIS FULLER.

Plants.

ARTHUR H. FEWKES, OF NEWTON HIGHLANDS, CHAIRMAN.
JAMES WHEELER. ROBERT CAMERON.
DAVID F. ROY. ROBERT MELROSE GREY.

Flowers.

KENNETH FINLAYSON, OF BROOKLINE, CHAIRMAN.
MICHAEL H. NORTON. ELIJAH A. WOOD
WILLIAM NICHOLSON. JULIUS HEURLIN.

Fruits.

E. W. WOOD, OF WEST NEWTON, CHAIRMAN.
CHARLES F. CURTIS. J. WILLARD HILL. JOHN L. BIRD.
WARREN FENNO. GEORGE F. PIERCE. FREDERICK W. DAMON.

Vegetables.

WARREN H. HEUSTIS, OF BELMONT, CHAIRMAN.
VARNUM FROST. AARON LOW. JOSHUA C. STONE.
WALTER RUSSELL. GEORGE D. MOORE. MICHAEL SULLIVAN.

Forestry and Roadside Improvement.

JAMES STURGIS PRAY, of Cambridge, Chairman.

NATHANIEL S. SHALER. HENRY S. HUNNEWELL.
JAMES H. BOWDITCH. HARLAN P. KELSEY.

Gardens.

PATRICK NORTON, of Dorchester, Chairman.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND ARRANGEMENTS, *Ex officiis.*

HENRY W. WILSON. J. WOODWARD MANNING.

For Establishing Prizes.

WILLIAM H. ELLIOTT, of Brighton, Chairman.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND GARDENS, *Ex officiis.*

JACKSON T. DAWSON.

Committee of Arrangements.

JOSEPH H. WOODFORD, of Boston, Chairman.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND GARDENS, *Ex officiis.*

ROBERT FARQUHAR.

MEMBERS FOR LIFE.

Members of the Society and all other persons who may know of deaths, changes in residence, or other circumstances showing that the following list is incorrect in any particular, will confer a favor by promptly communicating to the Secretary any needed corrections.

Information, or any clew to it, is especially desired in regard to members whose names are marked thus †.

Adams, Mrs. Charles Francis, South Lincoln.
Adams, Henry Saxton, Boston.
Alger, Rev. R. F., Dorchester.
Allen, Hon. Charles H., Lowell.
Allen, Thomas, Boston.
Ames, F. Lothrop, North Easton.
Ames, Mrs. F. L., North Easton.
Ames, John S., North Easton.
Ames, Miss Mary S., North Easton.
Ames, Oakes, North Easton.
Ames, Oliver, North Easton.
Ames, Mrs. Oliver, Sr., North Easton.
Ames, Preston Adams, Washington D. C.
Ames, Miss Susan E., North Easton
Amory, C. W., Boston.
Amory, Frederick, Boston.
Anderson, Larz, Brookline.
Andrews, Charles L., Milton.
Andrews, Frank W., Washington, D. C.
Andros, Milton, San Francisco, Cal.
Appleton, Francis H., Boston.
Appleton, William S., Boston.
Arnold, Mrs. George Francis, Brookline.
Ash, John, Pomfret Centre, Conn.
Asmus, Ernst G., West Hoboken, N. J.
Atkins, Edwin F., Belmont.
Ayer, James B., Boston.

Bailey, Jason S., West Roxbury.
Bailey, Robert M., Dedham.
Baker, Clifton P., Dedham.
Baker, James E., South Lincoln.
Ball, George H., Boston.
Banfield, Francis L., M.D., Worcester.
Barber, J. Wesley, Newton.
Barnard, James M., Boston.
Barnard, Robert M., Everett.
Barnes, Walter S., Boston.
† Barney, Levi C., Boston.
Barry, John Marshall, Boston.
Barry, William C., Rochester, N. Y.
Bartlett, Francis, Beverly.
Bartlett, Miss Mary F., Boston.
Bates, Miss Mary D., Ipswich.
Baylies, Walter C., Taunton.
Beal, Leander, Swampscott.
Becker, Frederick C , Cambridge.
Beckford, Daniel R., Jr., Dedham.
Beebe, E. Pierson, Boston.
Beebe, Franklin H., Boston.
Beebe, J. Arthur, Boston.
Bigelow, Albert S., Cohasset.
Bigelow, Joseph S., Cohasset.
Bigelow, Dr. William Sturgis, Boston.
Black, George N., Manchester.

Blake, Miss Anne, Brookline.
Blake, Mrs. Arthur W , Brookline.
Blake, Edward D., Boston.
Blake, Francis, Weston.
Blake, Frederick A., Rochdale.
Blanchard, John W., West Newton.
Blinn, Richard D., Chicago, Ill.
Bliss, William, Boston.
Boardman, Samuel M., Hyde Park.
Boardman, T. Dennie, Manchester.
Bolles, William P., M. D., Roxbury.
Bosler, Frank C., Carlisle, Penn.
Bowditch, Charles P., Jamaica Plain.
Bowditch, Ernest W., Milton.
Bowditch, James H., Brookline.
Bowditch, Nathaniel I., Framingham.
Bowditch, William E., Roxbury.
Bowker, William H., Boston.
Brackett, Cephas H., Brighton.
Breck, Joseph Francis, Allston.
Bremer, Mrs. John L., Manchester.
Bresee, Albert, Hubbardton, Vt.
Brewer, Francis W., Hingham.
Briggs, William S., Lincoln.
Brigham, William T., Honolulu, Hawaii.
Brooks, Henry, Lincoln.
Brooks, J. Henry, Boston.
Brooks, Lawrence, Groton.
Brooks, Peter C., Boston.
Brooks, Shepherd, Boston.
Brown, Alfred S., Jamaica Plain.
Brown, Edward J., Weston.
Brown, George Barnard, Brookline.
Brown, John M., Belmont.
Brown, Samuel N., Boston.
Burlen, William H., Boston.
Burnett, Harry, Southborough.
Burnham, John A., Wenham.
Burr, Matthew H., Hingham.
Buswell, Frank E., Brooklyn, N. Y.
Butler, Aaron, Wakefield.
Butler, Edward K., Jamaica Plain.

Cabot, Dr. Arthur T., Boston.
Cabot, George E., Boston.
†Cadness, John, Flushing, N. Y.
Cains, William, South Boston.
Calder, Augustus P., Boston.
Cameron, Robert, Cambridge.
Campbell, Francis, Cambridge.
Capen, John, Boston.
Carlton, Samuel A., Boston.
Carr, Hon. John, Roxbury.
Carter, Charles N., Boston.
Carter, Miss Maria E., Woburn.
Cartwright, George, Dedham.
Casas, W. B. de las, Malden.
Chadbourne, Marshall W., East Watertown.
Chaffin, John C., Newton.
Chamberlain, Chauncy W., Boston.
†Chase, Andrew J., Lynn.
Chase, Daniel E., Somerville.
Chase, William M., Dorchester.
Cheney, Mrs. Elizabeth S., Wellesley.
Childs, Nathaniel R., Boston.
Choate, Charles F., Southborough.
Christie, William, Everett.
Claflin, Hon. William, Newtonville.
Clapp, Edward B., Dorchester.
Clapp, James H., Dorchester.
Clapp, William C., Dorchester.
Clark, Benjamin C., Boston.
Clark, B. Preston, Cohasset.
Clark, Miss Eleanor J., Pomfret Centre, Conn.
Clark, J. Warren, Millis.
Clarke, Miss Cora H., Boston.
Clarke, Eliot C., Boston.
Clough, Micajah Pratt, Lynn.
Cobb, John C., Milton.
Coburn, Isaac E., Everett.
Codman, James M., Brookline.
Codman, Ogden, South Lincoln.
Coe, Miss Mary Alma, Boston.
Coffin, Abraham B., Winchester.
Cole, Edward E., Boston.
Collamore, Miss Helen, Boston.
Colton, Samuel H., Worcester.
Converse, Elisha S., Malden.

Converse, Col. H. E., Malden.
Coolidge, Harold J., Boston.
Coolidge, Joshua, Mount Auburn.
Coolidge, J. Randolph, Chestnut Hill.
Coolidge, Mrs. J. Randolph, Chestnut Hill.
Coolidge, T. Jefferson, Jr., Boston.
Cottle, Henry C., Boston.
Cox, Thomas A., Dorchester.
Coy, Samuel I., Boston.
Craig, William Nicol, North Easton.
Crane, Zenas, Dalton.
Crawford, Dr. Sarah M., Roxbury.
Crocker, Hon. George G., Boston.
Crocker, Miss S. H., Boston.
Crosby, George E., West Medford.
Cross, Alfred Richard, Nantasket.
Crowell, Randall H., Watertown.
Curtis, Charles F., Jamaica Plain.
Curtis, Charles P., Swampscott.
Curtis, Charles P., Jr., Boston.
Cushing, Livingston, Weston.
Cushing, Robert M., Boston.
Cutting, Gen. Walter, Pittsfield.

†Daggett, Henry C., Boston.
Dalton, Charles H., Beverly.
Daly, John C., Roxbury.
Damon, Frederick W., Arlington.
Dana, Charles B., Wellesley.
Daniels, Dr. Edwin A., Boston.
Davenport, Albert M., Watertown.
Davenport, George E., Medford.
Davis, Arthur E., Wellesley.
Davis, Mrs. Arthur E., Wellesley.
Davis, Edward L., Worcester.
Davis, L. Shannon, Brookline.
Dawson, Jackson T., Jamaica Plain.
Dee, Thomas W., Cambridge.
Denny, Clarence H., Boston.
Denton, Eben, Dorchester.
Dexter, F. Gordon, Boston.
Dexter, George, Beverly.
Dike, Charles C., Stoneham.
Doane, Edgar Howard, Wenham.
Doliber, Thomas, Brookline.
Donald, William, West Roxbury.
Donaldson, James, Roxbury.
Dorr, George, Dorchester.
Dove, George W. W., Andover.
Dowse, William B. H., West Newton.
Draper, Hon. Eben S., Hopedale.
Draper, George A., Hopedale.
Dreer, William F., Philadelphia, Pa.
Dumaresq, Herbert, Chestnut Hill.
Duncan, James L., New York, N. Y.
Dunlap, James H., Nashua, N. H.
Durant, William, Boston.
Durfee, George B., Fall River.
Dutcher, Frank J., Hopedale.
Dwight, Theodore F., Kendal Green.
Dyer, Herbert H., Cambridge.

Eaton, Horace, Cambridge.
Edgar, William W., Waverly.
Eldredge, H. Fisher, Boston.
†Eldridge, E. H., Roxbury.
Elliot, Mrs. John W., Boston.
Elliott, William H., Brighton.
Endicott, William, Boston.
Endicott, William, Jr., Boston.
Endicott, William C., Jr., Danvers.
Endicott, William E., Canton.
Estabrook, Arthur F , Boston.
Ewell, Warren, Dorchester.

Fabyan, George F., Brookline.
Fairchild, Charles, Boston.
Falconer, William, Pittsburgh, Pa.
Farlow, Lewis H., Cambridge.
Farnsworth, Mrs. William, Dedham.
Farquhar, James F. M., Roslin dale.
Farquhar, John K. M. L , Roxbury.
Farquhar, Robert, North Cambridge.
Faxon, John, Quincy.
Fay, H. H., Wood's Holl.
Fay, Joseph S., Jr., Wood's Holl.
Fenno, L. Carteret, Boston.
Fessenden, George B., Allston.
Fewkes, Arthur H., Newton Highlands.
Finlayson, Kenneth, Brookline.
Fisher, Peter, Ellis.

Flagg, Augustus, Boston.
Fletcher, George V., Belmont.
Fletcher, J. Henry, Belmont.
Fletcher, John W., Chelsea.
Flint, David B., Boston.
Foster, Charles H. W., Brookline.
Foster, Francis C., Cambridge.
Fottler, John, Jr., Dorchester.
Fowle, George W., Jamaica Plain.
French, Miss Caroline L. W., Boston.
French, S. Waldo, Jamaica Plain.
French, W. Clifford, Newton.
Frohock, Roscoe R., Malden.
Frost, Irving B., Belmont.
Frost, Varnum, Arlington.

Galloupe, Charles W., Swampscott.
Gardner, Mrs. Augustus P., Hamilton.
Gardner, George A., Boston.
Gardner, George P., Boston.
Gardner, John L., Boston.
Gardner, Mrs. John L., Brookline.
Gardner, William Amory, Groton.
Gaston, William A., Boston.
Gibbs, Wolcott, M.D., Newport, R.I.
Gill, George B., Medford.
Gillard, William, Dorchester.
Gilmore, E. W., North Easton.
Gilson, F. Howard, Wellesley Hills.
Goddard, Joseph, Sharon.
Goodell, L. W., Dwight.
† Gould, Samuel, Boston.
Gowing, Mrs. Clara E., Kendal Green.
Gray, James, Wellesley.
Gray, Mrs. John C., Boston.
Gregory, Hon. James J. H., Marblehead.
Grew, Edward S., Boston.
Grey, Benjamin, Malden.

Hadwen, Obadiah B., Worcester.
Hale, James O., Byfield.
Hall, Edwin A., Cambridgeport.
Hall, George A., Chelsea.
Hall, Jackson E., Cambridge.
Hall, Osborn B., Malden.
Hall, William F., Brookline.
Halliday, William H., South Boston.
Hammond, Gardiner G, New London, Conn.
Hammond, George W., Boston.
† Harding, George W., Arlington.
Harding, Louis B., Chestnut Hill.
Hardy, F. D., Cambridgeport.
Hargraves, William J., Jamaica Plain.
Harlow, James F., Quincy.
Harris, Charles, Cambridge.
Harris, Thaddeus William, A.M., Keene, N. H.
Hartshorn, Arthur E., Worcester.
Harwood, George Fred, Newton.
Haskell, Edwin B., Auburndale.
Hastings, Levi W., Brookline.
Hatch, Mrs. C. S., North Cambridge.
Hatch, Edward, Boston.
Haven, Franklin, Boston.
Hawken, Mrs. Thomas, Rockland, Me.
Hayward, George P., Roxbury.
† Hazeltine, Hazen, Boston.
Hellier, Charles E., Boston.
Hemenway, Augustus, Canton.
Hemenway, Mrs. Augustus, Canton.
Henshaw, Joseph P. B., Boston.
Henshaw, Samuel, Cambridge.
Heurlin, Julius, South Braintree.
Hewett, Miss Mary C., Canton.
Hews, Albert H., North Cambridge.
Higginson, Francis L., Boston.
Higginson, Mrs. Henry L., Boston.
Hilbourn, A. J., Boston.
Hill, John, Stoneham.
Hittinger, Jacob, Mt. Auburn.
Hoar, Samuel, Concord.
Hodgkins, John E., Portsmouth, N.H.
Hoitt, Hon. Charles W., Nashua, N. H.
Hollingsworth, Amor L., Milton.
Hollingsworth, Z. T., Boston.

Hollis, George W., Grantville.
Holmes, Edward J., Boston.
Holt, Gustavus C., Belmont.
Holt, Mrs. Stephen A., Cambridge.
Holt, William W., Winchester.
Hooper, Mrs. Robert C., Boston.
Hooper, William, Boston.
Horner, Mrs. Charlotte N.S., Georgetown.
Horsford, Miss Kate, Cambridge.
Hosmer, Oscar, Wenham.
Hovey, Charles H., South Pasadena, Cal.
Hovey, Stillman S., Woburn.
Howard, Joseph W., Somerville.
Hubbard, Charles Wells, Weston.
Hubbard, James C., Everett.
Humphrey, George W., Dedham.
Hunnewell, Arthur, Wellesley.
Hunnewell, Henry Sargent, Wellesley.
Hunnewell, Walter, Wellesley.
Hunt, Dudley F., Reading.
Hunt, Francis W., Melrose.
Hunt, Franklin, Charlestown, N. H.
Hunt, William H , Concord.

Jack, John George, Jamaica Plain.
Jackson, Charles L., Cambridge.
Jackson, Robert T., Boston.
James, Ellerton, Nahant.
James, Mrs. Ellerton, Nahant .
James, George Abbot, Nahant.
Janvrin, William S., Revere.
Jeffries, William A., Boston.
Jenks, Charles W., Bedford.
Johanssohn, Emil, Brookline.
Johnson, J. Frank, Malden.
Jones, Jerome, Brookline.
Jones, Dr. Mary E., Boston.
Jordan, Eben D., Boston.
Jordan, Henry G., Hingham.
Jose, Edwin H., Cambridgeport.

Kakas, Edward, West Medford.
Kellen, William V., Marion.
Kelley, George B., Jamaica Plain.
Kendall, D. S., Woodstock, Ont.
Kendall, Edward, Cambridgeport.
† Kendall, Joseph R., San Francisco, Cal.
Kendall, Dr. Walter G., Atlantic.
Kendrick, Mrs. H. P., Boston.
Kennedy, George G., M.D., Roxbury.
Kent, John, Chestnut Hill.
Keyes, John M., Concord.
Kidder, Charles A., Southborough.
Kidder, Nathaniel T., Milton.
† Kimball, A. P., Boston.
Kimball, David P., Boston.
King, D. Webster. Boston.
Kingman, Abner A., Brookline.
Kingman, C. D., Middleborough.
Kinney, H. R., Worcester.
Knapp, Walter H., Newtonville.

Lamb, Horatio A., Milton.
Lancaster, Charles B., Boston.
Lanier, Charles, Lenox.
Lawrence, Amory A., Boston.
Lawrence, Amos A., Boston.
Lawrence, James, Groton.
Lawrence, John, Groton.
Lawrence, Rt. Rev. William, Boston.
Learned, Charles A., Arlington.
Lee, Daniel D., Jamaica Plain.
Lee, Francis H., Salem.
Lee, George C., Newton.
Leeson, Hon. Joseph R., Newton Centre.
Leighton, George B., Monadnock, N. H.
Lemme, Frederick, Charlestown.
Leuchars, Robert B., Dorchester.
Lincoln, George, Hingham.
Lincoln, Col. Solomon, Boston.
Little, James L., Brookline.
Little, John Mason, Swampscott.
Locke, Edwin F., West Medford.
Locke, Isaac H., Belmont.
Lockwood, Rhodes, Boston.
Lodge, Richard W., Boston.

Loftus, John P., Dorchester.
Loomis, Elihu G., Bedford.
Loring, Augustus P., Beverly.
Loring, Mrs. William Caleb, Beverly.
Lothrop, William S. H., Boston.
Low, George D., Boston.
†Lowder, John, Watertown.
Lowell, Abbott Lawrence, Boston.
Lowell, Miss Amy, Brookline.
Luke, Otis H., Brookline.
Lumb, William, Boston.
Lunt, William W., Hingham.
Lyman, George H., Wareham.
Lyman, Mrs. Theodore, Brookline.

Mabbett, George, Plymouth.
Mackie, George, M. D., Attleboro.
† Mahoney, John, Boston.
Mallett, E. B., Jr., Freeport, Me.
Mann, James F., Ipswich.
Manning, Jacob W., Reading.
Manning, J. Woodward, Reading.
Manning, Mrs. Lydia B., Reading.
Manning, Warren H., Brookline.
Marshall, Frederick F., Everett.
Marston, Howard, Boston.
Mason, Miss Ellen F., Boston.
Mason, Col. Frederick, Taunton.
Mathison, Fred. R., Waltham.
Matthews, Nathan, Boston.
Matthews, Nathan, Jr., Boston.
May, Frederick W. G., Boston.
McCarty, Timothy, Providence, R. I.
McWilliam, George, Whitinsville.
Melvin, George, South Framingham.
Melvin, James C., West Newton.
Merriam, Charles, Boston.
Merriam, Herbert, Weston.
Merrill, Hon. Moody, Roxbury.
Metivier, James, Cambridge.
Milmore, Mrs. Joseph, Washington, D. C.
Minot, Charles S., Milton.
Mitton, Edward J., Brookline.
Mixter, George, Boston.
Monteith, David, Dedham.
Montgomery, Alexander, Natick.
Montgomery, Alexander, Jr., Natick
Moore, George D., Arlington.
Moore, John H., Concord.
Morgan, George H., New York, N. Y.
Morse, John T., Jr., Boston.
Morse, Robert M., Jamaica Plain.
Morton, James H., Mattapan.
Moseley, Charles H., Dorchester.
Motley, E. Preble, Boston.
Mudge, George A., Portsmouth, N. H.
Murdock, Albert L., Boston.
Murphy, William Bowen, Boston.
Murray, Peter, Fairhaven.
Mutch, John, Newtonville.

Nevins, Mrs. David, Methuen.
Newman, John R., Winchester.
Newton, Rev. William W., Pittsfield.
Nickerson, Mrs. George A., Dedham.
Norton, Charles W., Allston.
Norton, Edward E., Boston.

Oakman, Hiram A., North Marshfield.
Olmsted, Frederick Law, Jr., Brookline.
Olmsted, John C., Brookline.
Orpet, Edward O., South Lancaster.

Page, Mrs. Henrietta, Boston.
Paige, Clifton H., Mattapan.
Parker, Charles W., Boston.
Parkman, Henry, Boston.
Parsons, John E., Lenox.
Patten, Marcellus A., Tewksbury.
Paul, Alfred W., Dighton.
Peabody, Francis H., Boston.
Peabody, George A., Danvers.
Peabody, John E., Salem.
Peabody, S. Endicott, Salem.
Peck, O. H., Denver, Col.
Peck, William G., Arlington.
Peirce, Miss Marion W., Topsfield.
† Perry, George W., Malden.

Pfaff, Col. Charles, South Framingham.
Phillips, John C., North Beverly.
Phillips, Mrs. John C., North Beverly.
Phillips, William, North Beverly.
Pickman, Dudley L., Boston.
Pickman, Mrs. Ellen R., Boston.
Pierce, Dean, Brookline.
Pierce, Elisha N., Waltham.
Pierce, George Francis, Neponset.
Pond, Preston, Winchester.
Poor, John R., Boston.
Pope, Col. Albert A., Cohasset.
Porter, Alexander S., Boston.
Porter, James C., Wollaston.
Porter, Hon. Joseph S., Washington, D. C.
Prang, Louis, Boston.
Pratt, Laban, Dorchester.
Pratt, Lucius G., West Newton.
Pratt, Robert M., Boston.
Prendergast, J. M., Boston.
Prescott, Eben C., New York, N. Y.
Presson, Alfred, Gloucester.
Pringle, Cyrus G., Charlotte, Vt.
Proctor, T. E., Boston.
Prouty, Gardner, Littleton.
Putnam, George, Manchester.
Putnam, George J., Brookline.
Putnam, Joshua H., Newton Centre.

Quinby, Hosea M., M.D., Worcester.

Raddin, Everett W., North Cambridge.
Rand, Harry S., North Cambridge.
Rand, Oliver J., Cambridgeport.
Rawson, Warren W., Arlington.
Ray, James F., Franklin.
Raymond, Walter, Boston.
Read, Charles A., Manchester.
Reardon, Edmund, Cambridgeport.
Reardon, John B., Boston.
Reed, Henry R., Jamaica Plain.
Rice, George C., Worcester.
Rich, William P., Chelsea.
Richards, John J., Brookline.
Richardson, Charles E., Brookline.
Richardson, Dr. William L., Boston.
Rinn, J. Ph., Boston.
Ripley, Charles, Dorchester.
Ripley, Ebed L., Hingham Centre.
Robbins, I. Gilbert, Melrose Highlands.
Robinson, John, Salem.
Robinson Joseph B., Dorchester.
Roffe, Albert H., Newton Centre.
Rogers, Mrs. Jacob C., Peabody.
Roland, Thomas, Nahant.
Rothwell, James E., Brookline.
Roy, David Frank, Malden.
Ruddick, William H., M.D., South Boston.
Russell, George, Woburn.
Russell, James S., Milton.
Russell, Hon. John E., Leicester.
Russell, Walter, Arlington.

Salisbury, William C. G., Brookline.
Saltonstall, Richard M., Chestnut Hill.
Sanford, Oliver S., Wellesley.
Sanger, Mrs. George P., Boston.
Sargent, Andrew Robeson, Brookline.
Sargent, Charles S., Brookline.
Sargent, Mrs. Charles S., Brookline.
Sargent, Charles Sprague, Jr., Brookline.
Sargent, Mrs. Francis W., Wellesley.
Sawtelle, Eli A., Boston.
Sawyer, Timothy T., Boston.
Scorgie, James C., Cambridge.
† Scott, Charles, Newton.
Sears, Miss Clara E., Boston.
Sears, Miss Emily E., Boston.
Sears, Dr. Henry F., Boston.
Sears, J. Montgomery, Boston.
Sears, Mrs. J. Montgomery, Boston.
Shaler, Nathaniel S., Cambridge.
Sharp, Miss Helen, Boston.

Shaw, Christopher C., Milford, N. H.
Shaw, Francis, Wayland.
Shaw, Mrs. Robert G., Wellesley.
Sherman, William H., Boston.
Shorey, John L., Lynn.
Shuman, Hon. A., Roxbury.
Shurtleff, Josiah B., Jr., Revere.
Sias, Charles D., Wenham.
Siebrecht, H. A., New Rochelle, N.Y.
Simpkins, Miss Mabel, Yarmouth.
Skinner, Francis, Boston.
Skinner, Francis, Jr., Dedham.
Sleeper, Henry Davis, Boston.
Smith, Archibald, West Somerville.
Smith, Calvin W., Wellesley Hills.
Smith, Charles H., Newton Highlands.
Smith, Charles S., Lincoln.
Smith, Edward N., San Francisco, Cal.
Smith, George O., East Lexington.
Smith, Thomas Page, Waltham.
Snow, Eugene A., Melrose.
Sohier, Col. William D., Beverly.
Souther, Charles H., Jamaica Plain.
Spaulding, Edward, West Newton.
Spooner, William H., Jamaica Plain.
Sprague, Isaac, Wellesley Hills.
Springall, George, Malden.
Stearns, Charles H., Brookline.
Stearns, Frank W., Newton.
Stedman, Henry R., M. D., Roslindale.
Stevens, Hon. Moses T., Andover.
Stewart, William J., Winchester.
Stone, Charles A., Newton.
Stone, Charles W., Boston.
Stone, Prof. George E , Amherst.
Stone, George F., Chestnut Hill.
Strater, Herman, Roxbury.
Strong, William C., Waban.
Sturgis, Richard Clipston, Boston.
Swain Charles E., Roxbury.
Sweet, Everell F., Malden.

Taylor, Charles H., Boston.
Taylor, Horace B., Portland, Me.
Temple, Felker L., Boston.
Tenney, C. H., Methuen.
Thatcher, William, Brookline.
Thayer, Mrs. Alice R., Boston.
Thayer, Bayard, Lancaster.
Thayer, Mrs. Bayard, Lancaster.
Thayer, Eugene V. R., South Lancaster.
Thayer, Mrs. Eugene V. R., South Lancaster.
Thayer, John E., South Lancaster.
Thayer, Mrs. John E., South Lancaster.
Thayer, Nathaniel, Lancaster.
Thayer, Mrs. Nathaniel, Lancaster.
Thayer, S. V. R., Boston.
Thiemann, Hermann, Manchester.
Thomas, W. B., Manchester.
Thurlow, Thomas C., West Newbury.
Tilton, Stephen W., Allston.
Todd, John, Hingham.
Tolman, Benjamin, Concord.
Tolman, Miss Harriet S., Boston.
Toppan, Roland W., Malden.
Torrey, Everett, Charlestown.
Tower, Miss Ellen May, Lexington.
Tower, Mrs. Helen M., Cambridge.
Tower, Sylvester, Boston.
Travis, Charles B., Brighton.
Trepess, Samuel J., Glencove, L. I., N. Y.
Tucker, Lawrence, Boston.
†Turner, John M., Dorchester.

Underwood, Loring, Belmont.

Vander-Woerd, Charles, Waltham.
Vaughan, William Warren, Boston.
Vinal, Miss Mary L., Somerville.

Wakefield, E. H., Cambridge.
Walcott, Henry P., M.D., Cambridge.
Waldo, C. Sidney, Jamaica Plain.
Wales, George O., Braintree.

Walker, Miss Mary Sophia, Waltham.
Walley, Mrs. W. P., Boston.
Walsh, Michael H., Wood's Holl.
Waltham, George C., Dorchester.
Walton, Daniel G., Wakefield.
Warburton, Chatterton, Fall River.
Ward, Francis Jackson, Roxbury.
Ward, John, Newton Centre.
Ware, Benjamin P., Clifton.
Ware, Miss Mary L., Boston.
Warren, Samuel D., Dedham.
Washburn, Andrew, Hyde Hark.
Watson, Benjamin M., Jamaica Plain.
Watson, Thomas A., East Braintree.
Watts, Isaac, Waverly.
Webber, Aaron D., Boston.
Webster, Hollis, Cambridge.
Welch, David, Dorchester.
Welch, Edward J., Dorchester.
Weld, Christopher Minot, Jamaica Plain.
Weld, George W., Boston.
Weld, Richard H., Boston.
Weld, Gen. Stephen M., Dedham.
West, Mrs. Maria L., Neponset.
Weston, Seth, Chelsea.
Wheeler, Frank, Concord.
Wheeler, James, Brookline.
Wheeler, Wilfred, Concord.
Wheelwright, A. C., Brookline.
Wheelwright, Edmund M., Boston.
Whitcomb, William B., Medford.
White, Mrs. Charles T., Boston.
White, Francis A., Brookline.
White, George R., Boston.
White, Joseph H., Brookline.
Whitney, Arthur E., Winchester.
Whitney, Ellerton P., Milton.
Whitney, Henry M., Cohasset.
Whittier, George E., Groton.
Whittier, William Benjamin, South Framingham.
Wigglesworth, George, Milton.
Wilbur, George B., Wood's Holl.
Wilder, Edward Baker, Dorchester.
Wilder, Henry A., Malden.
Willard, E. W., Newport, R. I.
Willcutt, Levi L., Brookline.
Williams, Miss Adelia Coffin, Roxbury.
Williams, Benjamin B., Boston.
Williams, Henry Bigelow, Boston.
Williams, John Davis, Boston.
Williams, Philander, Taunton.
Willis, Joshua C., Roxbury.
Wilson, Col. Henry W., Boston.
Wilson, William Power, Boston.
Winthrop, Robert C., Jr., Boston.
Wood, William K., West Newton.
Wright, George C., West Acton.
Wright, John G., Brookline.
Wyman, Oliver B., Shrewsbury.
Wyman, Windsor H., North Abington.

ANNUAL MEMBERS.

Members of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Alles, William H., Chestnut Hill.
Anderson, George M., Milton.
Arnold, Miss Sarah L., Newton Centre.
Atkinson, Miss Caroline P., Brookline.
Atkinson, Edward, Brookline.
Ayres, Miss Helen F., Medford.

Bangs, Francis R., Boston.
Barker, John G., South Bend, Ind.
Barr, John, Wellesley.
Bigelow, Arthur J., Eastlake, Worcester.
Bigelow, Mrs. Nancy J., Southborough.
Bird, John L., Dorchester.
Blackmur, Paul R., Quincy.
Blomberg, Carl, North Easton.
Boyden, Clarence F., Taunton.
Bradley, Miss Abby A., Hingham.
Braman, George H., Newton.
Breck, Charles H., Newton.
Breed, Edward W., Clinton.
Brunton, Frank, Stockbridge.
Bullard, John C., Cambridge.
Butler, Edward, Wellesley.

Carpenter, Frank O., West Roxbury.
Carter, Mrs. Sarah D. J., Wilmington.
Cary, Miss Alice B., Lexington.
Chase, Joseph S., Malden.
Chase, Philip A., Lynn.
Chubbuck, Isaac Y., Roxbury.
Clapp, Henry L., Roxbury.
Clark, John W., North Hadley.
Clark, Joseph, Manchester.
Clark, Theodore M., Newtonville.
Clinkaberry, Henry T., Trenton, N. J.
Collins, Frank S., Malden.
Comley, Norris F., Lexington.
Coolidge, Dr. Sumner, Watertown.
Cotter, Lawrence, Dorchester.
Cotting, Charles U., Boston.
Crosby, J. Allen, Jamaica Plain.
Curtis, Joseph H., Boston.
Curtis, Louville, Tyngsborough.

Davis, Frederick S., West Roxbury.
Derby, William H., Revere.
Dolbear, Mrs. Alice J., College Hill.
Dorr, George B., Boston.
Doyle, William E., Cambridge.
Duffley, Daniel, Brookline.
Duncan, John W., West Roxbury.

Eastman, Edmund C., Brookline.
Eaton, Warren E., Reading.
Endicott, Miss Charlotte M., Canton.
Eustis, William Tracy, Brookline.
Evans, Frank H., Malden.
Ewell, Marshall F., Marshfield Hills.

Farlow, Mrs. William G., Cambridge.
Fenno, Warren, Revere.
Fisher, Sewell, Boston.
Fiske, Harry E., Wollaston.

Fitzgerald, Desmond, Brookline.
Fletcher, Fred W., Auburndale.
Forbes, William H., Jamaica Plain.
Foster, Lucius H , Dorchester.
Francis, George E., M. D., Worcester.
Fuller, T. Otis, Needham.

Garthley, James, Fairhaven.
Gill, Mrs. E. M., Medford.
Gilman, Hon. Virgil C , Nashua, N. H.
Grew, Henry Sturgis, Boston.
Grey, Robert Melrose, North Easton.
Grey, Thomas J., Chelsea.

Hall, Charles H., M. D., Corning, Cal.
Hall, Stacy, Boston.
Hallstram, Charles W., Boston.
Ham, Fernald E., Burlington.
Harris, Frederick L., Wellesley.
Harrison, C. S., York, Nebraska.
Harrison, Thomas, Melrose Highlands.
Hartwell, Samuel, Lincoln.
Hatfield, T. D., Wellesley.
Hersey, Edmund, Hingham.
Heustis, Warren, H., Belmont.
Hildreth, Miss Ella F., Lowell.
Hill, Arthur Dehon, Boston.
Hill, J. Willard, Belmont.
Hinds, Warren D., Townsend.
Hobbs, George M., Boston.
Hollis, George, South Weymouth.
Houghton, George S., West Newton.
Hovey, Charles L., Waban.
Howden, Thomas, Whitinsville.
Hubbard, Allen, Newton Centre.
Hubbard, F. Tracey, Cambridge.
Huston, Miss Katharine W., Jamaica Plain.

Illenberger, Henry, Brookline.
Ireland, Robert D., Winthrop.

James, Robert Kent, Dorchester.
Jameson, G. W., East Lexington.

Keith, Mrs. Mary R., Washington, D. C.
Kelsey, Harlan P., Boston.
Kemp, William S , Brookline.
Kennard, Frederic H., Brookline.
Kimball, Richard D., Waban.
Knott, N. W. T., Waban.

Lancaster, Mrs. E. M , Roxbury.
Laurie, Robert, Newport, R. I.
Lawson, Joshua. Brookline.
Lewis, E. L., Taunton.
Lincoln, Miss Agnes W., Medford.
Lomax, George H., Somerville.
Loring, Mrs. Thacher, Brookline.
Loring, William C., Beverly.
Lothrop, Thornton K., Boston.
Low, Hon. Aaron, Hingham.

Manda, W. A., South Orange, N. J.
Manning, A. Chandler, Reading.
Manning, Richard C., Salem.
Martin William J., Milton.
Maynard, Charles, North Easton.
McLaren, Anthony, Westwood.
Meriam, Horatio C., D.M.D., Salem.
Metcalf, Dr. Ben H., Winthrop.
Milman, William, Roxbury.
Moody, Abner J., Lexington.
Morgan, George M., Boston.
Morrison, William, Cohasset.
Moseley, Frederick C., Dorchester.
Moseley, Frederick Strong, Newburyport.
Munson, Prof. W. M., Orono, Me.

Newton, John F., Roxbury.
Nicholson, William, Framingham.
Nixon, Arthur, Taunton.
Norton, Michael H., Boston.
Norton, Patrick, Dorchester.

Oakes, F. L., Newton.

Park, William D., Boston.
Parker, John, Newtonville.
Parker, Walter S., Reading.
Patterson, William, Quincy.
Peirce, George H., Concord Junction.
Pettigrew, John A., Jamaica Plain.
Pierce, Mrs. F. A., Brookline.
Plimpton, Willard P., West Newton.
Pray, James Sturgis, Cambridge.
Pritchard, John, Newtonville.
Purdie, George A., Ormond, Florida.

Rea, Charles H., Norwood.
Rea, Frederic J., Norwood.
Rich, Miss Ruth G., Dorchester.
Rich, William E. C., Roxbury.
Richards, Mrs. P. D., West Medford.
Robb, Peter B., Whitinsville.
Robbins, Oliver R., Weston.
Robinson, Walter A., Arlington.
Rodman, Miss Mary, Concord.
Ross, Charles W., Newtonville.
Ross, Henry Wilson, Newtonville.

Sander, Charles, Brookline.
Saunders, Miss Mary T., Salem.
Scott, Augustus E., Lexington.
Scudder, Samuel H., Cambridge.
Searles, E. F., Methuen.
Seaver, Edwin P., Waban.
Sharples, Stephen P., Cambridge.
Shaw, Hon. Edward P., Newburyport.
Shea, James B., Jamaica Plain.
Shepard Harvey N., Boston.
Squire, Miss Esther A., North Cambridge.
Stevens, Mrs. Mary L., Cambridge.
Stone, Joshua C., Watertown.
Strange, David T., Stoneham.
Sullivan, Michael, Revere.
Sutherland, George A., Roslindale.
Swan, Charles W., M.D., Brookline.

Tailby, Joseph, Wellesley.
Teele, William H., West Acton.
Tobey, Rufus T., Roxbury.
Tyler, Mrs. John F., North Andover.
Tyndale, Theodore H., Weymouth.

Vaughan, J. C., Chicago, Ill.

Ware, Horace E., Milton.
Warren, Samuel H., Weston.
Welch, Patrick, Dorchester.
Westwood, Thomas H., Jamaica Plain.
Wheeler, Ezra H., Dorchester.
Wheeler, Henry A., Newtonville.
Wheelwright, George William, Jamaica Plain.
White, W. Henry, Lowell.
Whitney, Joseph, Cambridgeport.
Whiton, Hon. Starkes, Hingham Centre.
Wilder, Miss Grace S., Dorchester.
Wilder, Miss Jemima R., Dorchester.
Wilkie, Edward A., Newtonville.
Winter, William C., Mansfield.
Wolcott, Mrs. H. L. T., Dedham.
Wood, Mrs. Anna D., West Newton.
Wood, Elijah A., West Newton.
Wood, E. W., West Newton.
Woodford, Joseph H., Boston.
Woods, Henry F., Boston.

Young, E. Bentley, Boston.

Zirngiebel, Denys, Needham.

EXTRACTS FROM THE CONSTITUTION AND BY-LAWS.

SECTION XXII.

Life Members.

The payment of thirty dollars shall constitute a Life Membership, and exempt the member from all future assessments, and any Annual Member, having paid all dues, may become a Life Member by the payment of twenty dollars in addition thereto.

Annual Membership.

Every Annual Member, before he receives his diploma, or exercises the privileges of a member, shall pay the sum of ten dollars as an admission fee, and shall be subject afterwards to an annual assessment of two dollars.

SECTION XXIII.

Withdrawal or Discontinuance of Membership.

Any member may withdraw from the Society, on giving notice to the Treasurer and paying the amount due from him. Any member who shall neglect for the space of two years to pay his annual assessment, after due notice from the Treasurer, shall cease to be a member. The Treasurer shall give notice of such withdrawals, or discontinuances to the Secretary, who shall erase such members' names from the list.

The attention of Annual Members is particularly called to Section XXIII.

HONORARY MEMBERS.

Members and correspondents of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Information, or any clew to it, is especially desired in regard to Joseph Maxwell, *elected in* 1830, *and* George W. Smith, *elected in* 1851.

Hon. George S. Boutwell, Groton

Clarence H. Clark, Ex-President of the Pennsylvania Horticultural Society, Philadelphia.

Joseph Jefferson, Buzzard's Bay.

Major L. A. Huguet-Latour, M. P., Montreal, Canada.

Sir Trevor Lawrence, President of the Royal Horticultural Society London.

Joseph Maxwell, Rio Janeiro, Brazil.

Donald G. Mitchell, New Haven, Conn.

Baron R. Von Osten Sacken, Heidelberg, Germany.

Samuel B. Parsons, Flushing, N. Y.

Dr. Henry S. Pritchett, President of the Massachusetts Institute of Technology, Boston.

George W. Smith, Boston.

Albert Viger, President of the National Society of Horticulture of France, Paris.

Hon. James Wilson, Secretary of Agriculture, Washington, D. C.

CORRESPONDING MEMBERS.

Members and correspondents of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly reporting to the Secretary the needed corrections.

Information, or any clew to it, is especially desired in regard to Alexander Burton, *elected in* 1829; S. Reynolds, M.D., 1832; *and* Francis Summerest (or Summerer), 1833.

Édouard André, Editor-in-chief of the Revue Horticole, Paris, France.

George Francis Atkinson, Professor of Botany in Cornell University, Ithaca, N. Y.

Professor L. H. Bailey, Horticultural Department, Cornell University, Ithaca, N. Y.

John Gilbert Baker, F. R. S., F. L. S., Kew, England.

Charles Baltet, Président de la Société Horticole, Vigneronne, et Forestière de l' Aube, Troyes, France.

Peter Barr, London, England.

Archibald F. Barron, Turnham Green, London, W.

Napoleon Baumann, Bolwiller, Alsace.

D. W. Beadle, 303 Crawford St., Toronto, Ontario.

Professor William J. Beal, Agricultural College, Michigan.

Prosper J. Berckmans, Ex-President of the American Pomological Society, Upper Montclair, New Jersey.

Charles E. Bessey, Ph. D., Professor of Botany in the Industrial College of the University of Nebraska, Lincoln.

Dr. Ch. Bolle, Berlin, Prussia.

Col. Gustavus B. Brackett, Pomologist to the United States Department of Agriculture, Washington, D. C.

Professor J. L. Budd, Ames, Iowa.

F. W. Burbidge, M.A., Trinity College Botanic Garden, Dublin, Ireland.

Alexander Burton, United States Consul at Cadiz, Spain, Philadelphia

Rev. H. Honywood D'Ombrain, Westwell Vicarage, Ashford, Kent, England.

Sir W. T. Thiselton Dyer. K. C. M. G., F. R. S., Director of the Royal Botanic Gardens, Kew, England.

PARKER EARLE, President of the American Horticultural Society, Roswell, N. M.

GEORGE ELLWANGER, Rochester, N. Y.

H. J. ELWES, F. R. S., Colesborne, Cheltenham, England.

WILLIAM G. FARLOW, M.D., Professor of Cryptogamic Botany, Harvard University.

B. E. FERNOW, Forestry School, Cornell University, Ithaca, N. Y.

HON. ROBERT W. FURNAS, Ex-President of the Nebraska State Horticultura-Society, Brownville.

BEVERLY T. GALLOWAY, Horticulturist and Superintendent of Gardens and Grounds of the United States Department of Agriculture, Washington, D.C.

CHARLES A. GOESSMANN, Ph.D., LL.D., Chemist of the Hatch Experiment Station of the Massachusetts Agricultural College, Amherst.

GEORGE L. GOODALE, M.D., Professor of Botany, Harvard University, Cambridge.

HENRY H. GOODELL, President of the Massachusetts Agricultural College, Amherst.

OBADIAH B. HADWEN, President of the Worcester County Horticultural Society, Worcester.

PROFESSOR BYRON D. HALSTED, Botanist and Horticulturist at the New Jersey Agricultural Experiment Station, New Brunswick, N. J.

PROFESSOR CARL HANSEN, of the Royal College of Agriculture, Copenhagen Denmark.

J. H. HART, Superintendent of the Botanic Garden, Trinidad.

DR. F. M. HEXAMER, Editor of the American Agriculturist, New York.

J. W. HOFFMANN, Colored State University, Orangeburg, S. C.

J. C. HOLDING, Ex-Treasurer and Secretary of the Cape of Good Hope Agricultural Society, Cape Town, Africa.

THE VERY REV. S. REYNOLDS HOLE, D.D., Dean of Rochester, Rochester, England.

SIR JOSEPH HOOKER, K.C.S.I., The Camp, Sunningdale, England.

JOSIAH HOOPES, West Chester, Pa.

SIR GEORGE KING, K. C. I. E., M. B., LL. D., F. R. S., Calcutta.

PROFESSOR WILLIAM R. LAZENBY, Department of Horticulture and Forestry; Secretary College of Agriculture and Domestic Science, Ohio State University, Columbus, O.

MAX LEICHTLIN, Baden-Baden, Germany.

VICTOR LEMOINE, Nancy, France.

DR. PETER MACOWAN, Government Botanist, Cape Town Herbarium, Cape Town, Africa.

DR. MAXWELL T. MASTERS, Editor of the Gardeners' Chronicle, London.

GEORGE MAW, Benthal, Kinley, Surrey, England.

T. C. MAXWELL, Geneva, N. Y.

F. W. MOORE, A. L. S., Curator of the Royal Botanic Gardens, Glasnevin, Dublin, Ireland.

DR. DANIEL MORRIS, C.M.G., D.Sc., M.A., F.L.S, Imperial Department of Agriculture, Barbados.

GEORGE NICHOLSON, Kew, England.
PETER NØVIK, Secretary of the Norwegian Horticultural Society, Christiania.
WILLIAM PAUL, Waltham Cross, London, N.
PROFESSOR D. P. PENHALLOW, Director of the Botanic Garden, Montreal, Canada.
P. T. QUINN, Newark, N. J.
CAVALIÈRE ENRICO RAGUSA, Palermo, Sicily.
D. REDMOND, St. Nicholas, Florida.
S. REYNOLDS, M.D., Schenectady, N. Y.
BENJAMIN LINCOLN ROBINSON, Ph.D., Curator of the Gray Herbarium of Harvard University, Cambridge.
WILLIAM ROBINSON, Editor of Gardening Illustrated, London.
WILLIAM SALWAY, Superintendent of Spring Grove Cemetery, Cincinnati, O.
EDGAR SANDERS, Chicago, Ill.
WILLIAM R. SMITH, Superintendent of the Botanic Garden, Washington, D. C.
ROBERT W. STARR, Port William, N. S.
DR. JOSEPH STAYMAN, Leavenworth, Kan.
FRANCIS SUMMERHST.
WILLIAM TRELEASE, Director of the Missouri Botanic Garden, St. Louis.
DR. MELCHIOR TREUB, Director of the Botanic Garden, Buitenzorg, Java.
H. J. VEITCH, Chelsea, England.
WILLIAM WATSON, Curator of Royal Gardens, Kew, England.
PROFESSOR L. WITTMACK, Secretary of the Royal Prussian Horticultural Society, Berlin, Prussia.

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EXPERIMENT STATION REPORTS WANTED.

The Massachusetts Horticultural Society is endeavoring to collect complete sets of the Bulletins and other publications of all the Agricultural Experiment Stations in the United States and Canada. Those named below are wanting, and any person having a spare copy will confer a favor by addressing the Librarian of the Society, Horticultural Hall, No. 300 Massachusetts Ave., Boston.

Alabama (Ag. and Mech. College Station).— Bulletins 4–6 (1884), 7–10 and 1–4 (1885), and 5–9 (1886). 7th Annual Report, for 1894, and 9th, for 1896.

Alabama (Canebrake Station).— All Bulletins later than 18, and all Annual Reports later than the 3d, for 1890.

Alabama (Tuskegee Station).—Bulletin 2.

Arizona. — 4th Annual Report, for 1893.

Arkansas.— Bulletin 1. All Annual Reports later than the 4th, for 1891, except the 8th, for 1895.

California.— Bulletins 32, 1878, and 1, 2, 3, 5, and 50, New Series.

Colorado.— Bulletin 3.

Connecticut (New Haven Station).—Bulletins 1 to 67, inclusive. Annual Reports for 1879 to 1883, inclusive.

Florida.— Annual Report for 1892.

Indiana.— (Purdue Univ. School of Ag.). — Bulletin 1. College Reports 1 to 14, inclusive

Iowa.—Bulletins 54, 55 and 56. (The original bulletins.)

Kentucky.— Bulletin 10.

Michigan.— Special Bulletin 1. 6th Annual Report, for 1892-93 (contained in Report of Michigan Board of Agriculture, 1893).

Missouri. — Bulletins 9, 13, 15, 16, 19, 20, 25 and 26 of Old Series. All Annual Reports since the 1st, for 1888, except those for 1896 to 1898, inclusive.

Montana.—Bulletins 27, 29 and 31.

New Jersey.— Bulletins 1, 4, 5, 15, 27 and 28.

New Mexico.— Eighth College Catalogue, 1897–98.

New York (Cornell). — 1st Annual Report, 1881–82, and all between that and 1888, except the 2nd, for 1882-83. (Reports of Agricultural Department of Cornell University.)

North Carolina. — Bulletins 1 to 56, inclusive, 69, 2d ed., and 174. 1st to 7th Biennial Reports. Meteorological Division, Bulletin 2 (68*b*). Special Bulletins 1 (77*a*) and 4 (82*a*). Weekly Weather Crop Bulletins 1–21, 1888; 1–24, 1889; 1–25, 1890; 2 and 4, 1891.

North Dakota. — 4th Annual Report, for 1893.

Ohio.— All Bulletins of First Series, except 16, 17, 18 and 19.

Oklahoma. — All Annual Reports previous to that for 1896–97, except that for 1893–94.

Pennsylvania. — Annual Reports for 1869, 1872, 1879–80, 1881, 1882, 1883 and 1884 [All issued by the State College.] Bulletin of Information No. 1.

South Carolina.— All Bulletins of the Old Series (previous to 1888) on the work of the Experimental Farm of the South Carolina College. 3d Annual Report, for 1890, and 6th, for 1893.

Texas.—College Bulletins 1–5, 1883–1887.

Virginia. — 10th Annual Report for 1898-99.

Washington. — Bulletins 28 and 29 6th, 7th and 8th Annual Reports, for 1895–96, 1896–97, and 1897–98.

West Virginia.— Special Bulletin — Potash and Paying Crops, 1890.

Wyoming.—Bulletins 2 to 4, 9 and 10.

Ontario Department of Agriculture, Toronto.—Bureau of Industries. — Agricultural Returns to the Ontario Bureau of Industries, Nov. 1882 (5th), Aug. 1883 (7th), and Nov. 1887 (20th).

Experiment S

TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1903.

PART I.

BOSTON:
PRINTED FOR THE SOCIETY.
1903.

☞ SEE LAST PAGE OF COVER.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1903.

PART I.

BOSTON:
PRINTED FOR THE SOCIETY.
1903.

The following lectures have been circulated to some extent in the form of slips reprinted from the reports made by the Secretary of the Society in the "Boston Evening Transcript." As here presented, the lectures are, as far as possible, printed in full, and reports of the discussions following the lectures are added, these, where it appeared necessary, having been carefully revised by the speakers.

The Committee on Lectures and Publication take this opportunity to repeat what they have before stated, that the Society is not to be held responsible for the certainty of the statements, the correctness of the opinions, or the accuracy of the nomenclature, in the lectures and discussions now or heretofore published, all of which must rest on the credit or judgment of the respective writers or speakers, the Society undertaking only to present these papers and discussions, or the substance of them, correctly.

AARON LOW,
J. H. BOWDITCH,
E. W. WOOD,
Committee on Lectures and Publication.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, January 3, 1903.

A duly notified stated meeting of the Society was held to-day at eleven o'clock. President HADWEN presided and there were seventy members present.

The President announced, that in view of the large amount of business to be transacted, he would defer his annual address to another occasion.

The Executive Committee reported the recommendation of the following appropriations for the year 1903:

For Prizes and Gratuities,	
Committee on Plants	$1,500.00
" " Flowers	1,875.00
" " Native Plants	125.00
" " Fruits	1,275.00
" " Vegetables	900.00
" " Gardens and Greenhouses .	375.00
Total	$6,050.00
For the Committee on School Gardens and Children's Herbariums, for Prizes $100 for incidental expenses 50 . . .	$150.00
For the Committee on Library, this sum to include the income of the French and Farlow Funds .	525.00

For the Committee of Arrangements, this sum to include all extraordinary expenses . . .	225.00
For the Committee on Forestry and Roadside Improvement	110.00
For the Committee on Lectures and Publication, this sum to include the income of $50 from the John Lewis Russell Fund	200.00
For the salary of the Treasurer and Superintendent of the Building	1,200.00
For the salary of the Secretary and Librarian .	1,500.00

These appropriations were unanimously voted.

The Executive Committee also reported the appointment of Charles E. Richardson as Treasurer and Superintendent of the Building, and of William P. Rich as Secretary and Librarian for the year 1903.

Henry L. Clapp, Chairman of the Committee on School Gardens and Children's Herbariums, presented a summary of the annual report of that committee.

The report was accepted and referred to the Committee on Publication.

Walter S. Parker, Chairman, read the annual report of the Library Committee which was accepted and referred to the Committee on Publication.

The annual reports of the Chairmen of the Committees on Native Plants, Arrangements, Lectures and Publication, Forestry and Roadside Improvement, and of the Inspector to the State Board of Agriculture were offered and, without reading, were accepted and referred to the Committee on Publication.

Dr. Henry P. Walcott, Chairman of the committee appointed July 5, 1902, to revise and amend the Constitution and By-laws now governing the Society, presented to the meeting the report of that committee.

The report, which was in print, contained the Charter of the Society, the several amendments thereto, and a proposed new code of By-laws.

In his preliminary remarks, the Chairman of the committee stated, that by advice of eminent counsel, it had been decided that the Charter required the election by the Society at large of a Treasurer and a Secretary, instead of their appointment by the Executive Committee as heretofore practiced.

The proposed new By-laws were then read in full by the Secretary of the committee on revision, John K. M. L. Farquhar, as follows:

BY-LAWS

OF THE

MASSACHUSETTS HORTICULTURAL SOCIETY.

PRELIMINARY.

These By-laws shall, except as hereinafter provided, go into effect on the morning of the first day of January, 1904.

The officers of the Society provided for in Section I. of these By-laws, other than the Delegate to the State Board of Agriculture, whose terms shall begin on the first day of January, 1904, shall be elected at a meeting of the Society to be held on the second Saturday after the first Monday of November, 1903.

The present Delegate to the State Board of Agriculture elected at the meeting held on the first Saturday of October, 1902, to serve for three years, shall hold office until the first day of January, 1906, and his successor shall be elected at the annual meeting of the Society to be held in November, 1905. Appropriations for prizes and gratuities to be awarded in the year 1904 shall be made at said meeting to be held on the second Saturday after the first Monday in November, 1903, on the recommendation of the existing Executive Committee; but no other appropriations shall be then made calling for any disbursements after the first day of January, 1904.

The ballots for such election shall be printed by the Secretary, and the names of candidates nominated for each office shall be printed thereon in alphabetical order, and the voting shall be as provided in Section XV. of these By-laws.

Nominations for officers to be elected at said meeting to be held on the second Saturday after the first Monday in November, 1903, shall be made as provided in Clause 2 of Section XIV. of these By-laws, and in no other manner; and the Secretary shall, immediately on receiving them, post such nominations in some public place in the Society's building. The Secretary shall also send a notice of said meeting to every member of the Society, as provided in Section I. of these By-laws.

No officer of the Society, professor, or member of any board or of any committee, shall be elected or appointed until said meeting, for a period expiring later than the 31st of December, 1903; and the existing Constitution and By-laws are hereby amended or repealed, so far as may be necessary to make this section effectual.

SECTION I.

MEETINGS.

The annual meeting of the Society for the transaction of business and for the election of officers, — namely, a President, two Vice-Presidents, a Treasurer, a Secretary, a Delegate to the State Board of Agriculture, a Board of Trustees, and a Nominating Committee, — shall be held on the second Saturday after the first Monday in November, and the officers elected shall enter upon their duties on the first day of January ensuing.

In addition to the annual meeting there shall be held a meeting at noon on the first Saturday in January in each year to be called the inaugural meeting, at which the President shall make an inaugural address, and the Treasurer and Secretary, whose terms of office expired on January first preceding, the Board of Trustees, the Library Committee, the Committee on Lectures and Publications, and every existing committee appointed by the Board of Trustees under the provisions of clause (8) Section IX. of the By-laws shall each make a report to the Society for the preceding year. No business except the hearing of such address and the acceptance or rejection of such reports shall be transacted at the inaugural meeting.

Special meetings of the Society may be called by order of the President, or by any five of the Board of Trustees, or upon request of fifteen members of the Society.

A notice of each meeting and of every adjourned meeting shall be mailed by the Secretary to each member at his last address appearing on the records of the Secretary at least ten days prior to the meeting; and the notice of a special meeting shall specify the business to be considered at such meeting, which shall be proposed as provided in Section II., and no business other than that specified shall be transacted thereat, and no new business shall be transacted at any adjourned meeting.

Thirty members shall constitute a quorum at any meeting of the Society.

SECTION II.

POWERS RESERVED TO THE SOCIETY.

The Society may, except as herein provided, by vote of its members, at any annual meeting or special meeting called as provided by Section I., transact any business lawful under its Charter and By-laws; may instruct the Trustees and other officers of the Society; and the vote of the Society shall supersede the action of any of its officers; provided, however, that acquired rights of third parties shall not be thereby impaired. No vote calling for any appropriation of money or any sale or conveyance of any of the Society's property shall be valid without the approval of the Board of Trustees, except that the Society may, by a vote of a majority of all its members, authorize such sale or conveyance of the real estate belonging to the Society without the approval of the Board of Trustees.

The Trustees, or any five of them, or any fifteen members of the Society, may propose business to be considered at any special meeting, of which proposed business notice shall be given as provided in Section I. No sale of the Society's real estate, and no expenditure or contract therefor amounting to more than five thousand dollars for any one purpose, shall be valid and binding on the Society unless authorized by a vote of the Society.

SECTION III.

OFFICERS.

The officers of the Society shall consist of a President, two Vice-Presidents, a Treasurer, a Secretary, a Delegate to the State Board of Agriculture, a Board of Trustees of fifteen members, a Nominating Committee of five members, and such other officers and committees as the Board of Trustees shall appoint, according to Section IX.: provided, however, that no person shall be eligible to any office unless he shall have been a member of the Society for two years preceding.

SECTION IV.

THE PRESIDENT.

The President shall be elected annually by the Society, and shall be *ex officio* a member of the Board of Trustees. His duties shall be to preside at the meetings of the Society and of the Board of Trustees; to preserve order; to state the business before the meeting; to state and put questions; and, in the case of an equal division on any question, to give the casting vote; and to call for accounts and reports from all committees.

SECTION V.

THE VICE-PRESIDENTS.

There shall be two Vice-Presidents, who shall, except as provided in Section X., be elected by the Society on alternate years, and shall serve two years. In the absence of the President, the senior Vice-President present shall exercise all the authority, privileges, and powers of the President; and, in case neither the President nor either Vice-President shall be present at any meeting, the meeting shall choose a President *pro tempore*, who shall be invested with all the powers and authority of the President.

SECTION VI.

THE TREASURER.

The Treasurer shall be elected annually by the Society, and shall have the following powers and duties: —

(*a*) He shall have charge of the funds of the Society, and shall deposit the same in such bank or trust company as the Board of Trustees shall direct, where his account as Treasurer shall be kept; and all payments shall be made by check.

(*b*) He shall attend to the renting of the Building and the collection of the rents and other income of the Society.

(*c*) He shall pay prizes and gratuities upon the written order of the Board of Trustees or the chairman of any committee authorized by said Board to give such order, and shall pay no bills until audited by an officer designated by the Board of Trustees.

(*d*) He shall have the care and custody of the seal of the Society and of the dies for the medals; and he shall cause the medals to be struck and certificates of merit to be prepared, when required, and shall deliver them as awarded.

(*e*) He shall have in his safe keeping the bonds, deeds, notes, certificates of stock, and other evidences of property, unless the Board of Trustees shall otherwise direct.

(*f*) He shall, unless the Board of Trustees shall otherwise order, make all transfers and investments, with the consent and approval of the Board of Trustees.

(*g*) He shall pay the taxes, insurance, interest on loans, and other debts, and keep correct account of the receipts and disbursements of the Society.

(*h*) He shall, in January of each year, send to every annual member a bill of the amount due from him.

(*i*) He shall, as early in the year as possible, present to the Board of Trustees a full statement of receipts and expenditures for the preceding year. The fiscal year shall commence on the first day of January, and all

assessments for the ensuing year shall be due at that time. He shall annually make a report to the society at the inaugural meeting at the close of his term of office.

(*j*) He shall give bond for the faithful performance of his duties in such sum and with such sureties as shall be approved by the Board of Trustees.

(*k*) He shall not make or issue any note or other negotiable instrument unless expressly authorized in each case so to do by the Board of Trustees who shall in each case in their vote containing such authorization provide that such note or other obligation shall not be valid or binding on the Society until countersigned by some person designated in such vote: provided, however, that he may be given authority by a general vote of the Board of Trustees to draw checks on the funds of the Society on deposit, as provided in Clause (*a*) of this Section VI.

He shall, in the discharge of all his duties, be subject to the control of the Board of Trustees.

SECTION VII.

THE SECRETARY.

The Secretary shall be elected annually by the Society. He shall conduct the correspondence of the Society, and shall keep copies of the same in a book provided for the purpose which shall be open to the inspection of the members at any meeting. He shall receive and read all letters and papers addressed to the Society, and shall dispose of them as provided by the By-laws or directed by the Society or by the Board of Trustees. He shall regularly record the proceedings at every meeting and every adjourned meeting of the Society in a book to be kept for that purpose. He shall call special meetings of the Society when ordered or requested, as provided in Section I.

He shall give notice to each person of his election to office or membership in the Society. He shall record the election of every member, and report his name and residence to the Treasurer. He shall deliver to the Board of Trustees a copy of the proceedings of each meeting, whenever requested, and shall prepare and countersign all diplomas or certificates of membership.

He shall prepare for each annual election an alphabetical list of the members of the Society.

He shall, under the direction of the Committee on Lectures and Publications, act as editor of the publications of the Society, prepare them for the press, and superintend the printing thereof. He shall make notes, for publication, of meetings for discussion of horticultural subjects, and shall perform such other literary work as may be directed by the Society or the Board of Trustees, or as may not be otherwise provided for.

In the absence of the Secretary at any meeting the President shall appoint a Secretary *pro tempore*.

SECTION VIII.

DELEGATE TO THE STATE BOARD OF AGRICULTURE.

The term of office of the Delegate to the State Board of Agriculture shall be for three years, and he shall be chosen at the annual meeting whenever his term of office is about to expire.

SECTION IX.

BOARD OF TRUSTEES.

The Board of Trustees shall consist of fifteen members, including the President and the two Vice-Presidents, who shall be members of the Board *ex officiis*. Four members in addition to the President and one Vice-President shall be chosen each year, except as provided in Section X., and shall serve for the term of three years.

The Board of Trustees shall hold stated meetings on the first Saturdays of January, April, and October in each year. Special meetings of the Board may be called by the President or by a call signed by any two members of the Board on at least three days' notice, which may be given by mail at the last address of the member so notified appearing on the records of the Secretary. This notice may be waived in writing. Eight members of the Board shall constitute a quorum thereof.

In the absence of action by the Society as provided in Section II., the Board of Trustees shall have and exercise the following powers and duties:—

(1) They shall have general charge and direction of the business of the Society.

(2) They shall have the care and management of the Society's real estate, and may lease the same, or any part thereof, and make all necessary repairs; but no sale of the Society's real estate, except sales of shares in real estate trusts, so called, held by the Society as part of its invested funds, shall be valid without a vote of the Society authorizing such sale.

(3) They shall have the care and management of the Society's invested funds and other personal property, with power to invest, reinvest, and transfer the same in their discretion, or they may authorize and approve transfers and investments made by the Treasurer, as provided in Section VI. They shall have the care of all stocks, bonds, and other personal property of the Society, but may leave the custody of the same in the Treasurer, as provided in Section VI; and they shall annually audit, or cause to be audited, the Treasurer's accounts.

(4) They shall consider and pass upon all questions of the appropriation of money, and shall, at the annual meeting, recommend to the Society the amount to be appropriated for prizes and gratuities and such other appro-

priations as they may deem advisable during the ensuing year. They may, however, subject to the provisions of Section II., make such additional appropriations for the purposes of the Society as they deem proper.

(5) They shall appoint the following committees: a Finance Committee, a Library Committee, and a Committee on Lectures and Publications. The members of the Finance Committee shall all be members of the Board of Trustees. The members of the Library Committee and the Committee on Publications need not all be members of the Board of Trustees.

(*a*) *The Finance Committee.* — The Finance Committee shall, except as herein provided, have and enjoy all powers and duties given by this Section IX. to the Board of Trustees in relation to the care and management of the Society's property, real and personal, other than its Library.

(*b*) *The Library Committee.* — The Library Committee shall, except as herein provided, have all powers given by this Section IX. to the Board of Trustees in relation to the care and management of the Library of the Society.

(*c*) *The Committee on Lectures and Publications.* — The Committee on Lectures and Publications shall superintend all publications of the Society and have the direction in each year of six or more lectures and essays on horticultural subjects, including that provided for by the John Lewis Russell Fund.

In addition to these committees the Board of Trustees may appoint such other committees from among their number as they see fit, and may delegate to such committees any of their powers; but no expenditure or contract for expenditure exceeding five hundred dollars at any one time, and no appointment of committees or officers of the Society, and no election of members thereto, shall be valid or binding without the action of a majority of the full Board of Trustees at a legal meeting.

Any powers given to any committee by the provisions of this clause (5) and any powers delegated to any such committee by special vote of the Board of Trustees, may be withdrawn or limited by vote of said Board at any subsequent time. The Board may at any time remove any or all of the members of any such committee, and substitute others in their places.

(6) They shall appoint a Superintendent of the Building and a Librarian of the Society, and define their duties, except when these are determined by the By-laws, and may remove them or either of them, and appoint others in their stead, whenever, in their opinion, the interests of the Society shall require it. They may employ such additional assistants as they deem best, and shall determine the compensation of all officers and agents of the Society.

(7) They shall arrange for six or more exhibitions of flowers, plants, fruits, and vegetables in each year, and shall have the entire charge of all arrangements for conducting the same.

(8) They shall appoint each year the following standing committees, the members of which need not be members of the Board of Trustees: (*a*) on

plants and flowers; (*b*) on fruits; (*c*) on vegetables. Each of these committees shall consist of three or more members. They shall also appoint each year a standing committee of five or more members on gardens. The President shall be one of this committee *ex officio*. In addition to the standing committees named in this Clause (8) the Board of Trustees may appoint such additional committees as may be required for conducting special exhibitions and for awarding prizes, and may, in their discretion, appoint persons from outside the membership of the Society to act as judges to award prizes either alone or in conjunction with any committee.

The Board of Trustees may delegate appropriate powers to any of the committees appointed under this Clause (8), excepting the power to appropriate money or to dispose of property of the Society. They may at any time revoke powers so delegated, and may at any time, in their discretion, remove any member of any such standing committee and substitute any other in his place.

SECTION X.

FIRST ELECTION OF VICE-PRESIDENTS AND BOARD OF TRUSTEES.

At the first meeting at which officers are to be elected, two Vice-Presidents shall be chosen, one to hold office until the qualification of his successor chosen at the annual meeting in November, 1904, and one to hold office until the qualification of his successor chosen at the annual meeting in November, 1905.

There shall also be chosen at said meeting twelve members of the Board of Trustees in addition to the President and two Vice-Presidents, so that the total number of said Board shall be fifteen. Four of said Trustees, other than the President and Vice-Presidents, shall be elected to and shall hold office until the qualification of their successors chosen at the annual meeting in November, 1906; four shall be elected to and shall hold office until the qualification of their successors chosen at the annual meeting held in November, 1905; and the remaining four shall be elected to and shall hold office until the qualification of their successors chosen at the annual meeting held in November, 1904.

SECTION XI.

THE LIBRARIAN.

The Librarian shall have charge of all books, drawings, engravings, herbariums, and other articles appertaining to the Library, and shall attend to the purchase, recording, cataloguing, arranging, binding, delivering, and receiving of books: these duties to be performed under the direction of the Board of Trustees or other committee thereof duly authorized or of the Library Committee. He shall as far as possible, assist those desiring to use the Library in their investigations.

SECTION XII.

THE SUPERINTENDENT OF THE BUILDING.

The Superintendent of the Building shall under the general direction of the Board of Trustees, or the Finance Committee, or other committee thereof duly authorized, or under the direction of the Treasurer, if the Board of Trustees shall so vote, have charge of the premises, and shall see that they are kept clean and in good repair, and that all Rules and Regulations in regard to their care are strictly enforced.

SECTION XIII.

VACANCIES.

Whenever a vacancy occurs in any office of the Society, such vacancy shall be filled by the Board of Trustees until the next annual meeting, when candidates shall be nominated as provided by these By-laws to fill the remaining term, if any, for which the vacancy exists.

SECTION XIV.

NOMINATING COMMITTEE.

(1) A Nominating Committee of five members shall be elected by the Society at its annual meeting. Said committee shall nominate at least twice the number of candidates required to fill each office of the Society. Said committee shall file such nominations with the Secretary at least one month before the annual meeting. The Secretary shall, immediately on receiving such nominations, post the same in some public place in the Society's Building.

(2) Nominations for any office, in addition to those made by the Nominating Committee, may be made, by papers signed by fifteen or more members of the Society, and deposited with the Secretary at least two weeks before the annual meeting. The Secretary shall, immediately on receiving such nominations, post the same in some public place in the Society's Building.

(3) The Secretary shall have the ballots printed under direction of the Nominating Committee. Each ballot shall state the number to be elected for each office and the names of candidates for each office shall be printed in alphabetical order. If any ballot is marked for more than the required number, the ballot shall be declared void as a vote for that office for which the excessive number is marked. Only such candidates shall be voted for as shall have been nominated as above provided in clauses (1) and (2) of this section.

SECTION XV.

VOTING.

All elections of the Society shall be by Australian ballot; and the polls shall be continuously open between the hours of twelve noon, and four in the afternoon on the day of the annual meeting.

The President or presiding officer shall appoint a committee of three to receive, assort, and count the votes given, and report the number. A plurality shall elect, and the President shall declare who are elected.

Voting by proxy shall not be allowed at any meeting.

SECTION XVI.

MEMBERSHIPS.

Any member may propose candidates for life or annual membership to the Board of Trustees. Such proposal shall be in writing and shall be accompanied by a statement of the qualifications of such candidate for membership. On any candidate being so proposed, said Board shall cause his name and the name of the member proposing him to be posted for at least one month in some public place in the Society's Building. During said month any member may file with the Secretary a written protest against the election of said candidate, and no candidate shall be eligible against whom thirty or more such protests have been so filed. At the first meeting of the Board of Trustees held after the expiration of the month during which the name of the candidate has been so posted, his name shall be voted on by such Board; and he shall be elected by a majority of the full number of such Board so voting. The candidate so elected shall qualify himself for membership within six months from the date when notice of his election is given him, or his election shall be void.

LIFE MEMBERS.

A payment of thirty dollars shall constitute a life membership, and exempt the member from all future assessments; and any annual member, having paid all dues, may become a life member by the payment of twenty dollars in addition thereto.

ANNUAL MEMBERSHIP.

Every annual member, before he receives his diploma or exercises the privileges of a member, shall pay the sum of ten dollars as an admission fee, and shall be subject afterwards to an annual assessment of two dollars.

PRIVILEGES.

Each member of the Society shall be entitled to the following privileges: —

1. To be present and vote at all the meetings of the Society.

2. To have personal access to the Library, and to consult any of the periodicals, books, or plates, or to examine any of the models belonging to the Society, under rules established by the Board of Trustees.

3. To have free admission to all the exhibitions of the Society, for himself and his immediate family.

4. To receive all the publications of the Society under rules established by the Board of Trustees.

SECTION XVII.

WITHDRAWAL OR DISCONTINUANCE OR EXPULSION OF MEMBERS.

Any member may cease to be a member by giving notice to that effect to the Secretary and paying the amount due from him to the Society. Any member who shall neglect for the space of two years to pay his annual assessment, after due notice from the Treasurer, shall cease to be a member. The Treasurer shall give notice of such withdrawal or discontinuance to the Secretary, who will erase such members' names from the list.

If any member shall dishonor the Society, or shall be guilty of any breach of good faith thereto, he may be expelled at any meeting of the Society, two-thirds of the members present voting therefor. But no member shall be expelled unless a written notice of the motion be served by the Secretary upon him personally, or left at his last or usual place of abode, at least twenty days before it is acted upon.

SECTION XVIII.

HONORARY AND CORRESPONDING MEMBERS.

The Society may, upon recommendation of the Board of Trustees, elect Honorary and Corresponding Members at any annual or special meeting, to each of whom the Secretary shall submit a Diploma or Certificate of Election, under the seal of the Society, signed by the President and countersigned by the Secretary; and such members shall not be entitled to hold office or to vote at any meeting.

SECTION XIX.

PRIZES AND GRATUITIES.

Prizes and gratuities may be awarded by the Board of Trustees, or by such committees or judges as may be appointed by them for such purpose,

to any person for the exhibition of any fruits, plants, flowers, or vegetables, either new of their kind or of uncommon excellence; or for any new and successful method of cultivating any variety of fruits, flowers, plants, trees, shrubs, or vegetables; or for any other object immediately connected with horticulture; or for the essential advancement of the objects of the Society in any other way. But no gratuity shall be awarded for any object which shall have been entered or exhibited for a prize. No award shall be made for any unworthy exhibit, and no gratuity given shall be of a larger amount than the lowest price established for the same exhibit.

SECTION XX.

AMENDMENTS.

Amendments to the By-laws may be proposed in writing by any member of the Society to the Board of Trustees at any meeting of the Board of Trustees held at least two months before the next annual meeting of the Society, and, on being approved by a majority of the Board, shall be filed with the Secretary in their original form or as amended at least thirty days before such annual meeting, and shall subsequently be submitted to such annual meeting; or any thirty members may propose amendments to be acted upon at any annual meeting of the Society, without the approval of the Board of Trustees, by filing the amendments in writing with the Secretary thirty days at least before such annual meeting. The vote on each amendment shall be "Yes" or "No."

The Secretary shall, at least three weeks before the meeting at which the same are to be considered, mail a copy of every proposed amendment to each member of the Society at his last address appearing on the records of the Secretary.

All amendments proposed shall be printed on one ballot, with a space for voting "Yes" or "No" opposite each amendment, thus:—

If you wish the amendment adopted, put a cross under "Yes." If not, under "No."	YES.	NO.
(Here the subject of the amendment.)		

Any amendment shall be adopted if it receives two-thirds of the votes cast. The polls shall remain open for the purpose of voting on any proposed amendments between the hours of noon and four in the afternoon, and the voting shall be by Australian ballot.

President Hadwen announced, that in accordance with the existing By-laws, a second reading was in order.

On motion of Dr. Walcott it was unanimously voted that the second reading of the proposed new By-laws be by title.

Mr. Farquhar then offered the second reading of the Proposed new By-laws as follows:

BY-LAWS

OF THE

MASSACHUSETTS HORTICULTURAL SOCIETY.

William C. Strong offered the following amendment, "Amend Section IX in clause (c) in the fourth line by substituting the word 'such' for the words 'six or more' and close the clause by the addition of the words "as may seem to the committee to be expedient."

Mr. Strong's amendment, which was read twice by Mr. Farquhar, was unanimously adopted.

Mr. Farquhar moved the following amendment, "that the word 'prize' be substituted for the word 'price' in the last line of Section XIX."

This amendment was read twice and unanimously adopted.

On motion of Benjamin P. Ware it was unanimously voted that the proposed new By-laws be accepted and entered upon the records of the Society and lie over for consideration at the next quarterly meeting in April.

The following named candidates having been recommended by the Executive Committee were, on ballot, elected to membership in the Society:

DANIEL SMILEY, of Mohonk Lake, N. Y.
MISS HARRIET E. FREEMAN, of Boston.
H. L. FROST, of Arlington.
JOHN L. CHAPMAN, of Hingham.

At this point in the meeting President Hadwen retired, calling Vice-President Ware to the Chair.

On motion of William H. Spooner it was voted that when this meeting adjourns it be to Saturday, February 7.

A communication was read from James Sturgis Pray, Chairman of the Committee on Forestry and Roadside Improvement, reporting the resignation of Harvey N. Shepard of that committee and suggesting the appointment of James H. Bowditch.

It was voted that the resignation of Mr. Shepard be accepted and that Mr. Bowditch be elected to fill the vacancy.

The Vice-President announced that the Schedule of Exhibitions for 1903 and the Program of Lectures were ready for distribution.

Adjourned.

WILLIAM P. RICH,
Secretary.

BUSINESS MEETING.

SATURDAY, February 7, 1903.

An adjourned meeting of the Society was held to-day at eleven o clock. President HADWEN presided and there were twenty members present.

Thomas Harrison moved that the Committee on Lectures and Publication be paid for their services on the same basis as other Standing Committees. The motion was favorably discussed by Benjamin P. Ware, Michael Sullivan, John L. Bird, and Aaron Low.

William H. Spooner moved an amendment, that the Chairman of the Committee on Lectures and Publication be paid a certain sum, equal to that paid to the chairmen of the other committees, and the motion as amended was adopted.

Aaron Low, Chairman of the Committee appointed to prepare a memorial of the late Lamont G. Burnham, reported as follows: —

In Memory of Lamont G. Burnham.

Mr. President:

Again we are called upon to place upon our records the death of a member of our Society, adding another name to that ever increasing list of those who have passed from this to the higher life.

Lamont Giddings Burnham was born in Essex, Massachusetts, August 15, 1844, and died September 25, 1902. As a boy he attended the district schools and afterwards the Putnam High School at Newburyport. It was while attending the latter school, at the age of seventeen, that he enlisted in Company E, Forty-eighth Regiment, M. V. M., and served with credit until the term of his enlistment expired. Later he served in Company F, Third Regiment, M. V. M., until the close of the war. At the reorganization of the Massachusetts Volunteer Militia, he was appointed by General Isaac S. Burrill, Commander of the first Brigade, as Quarter-master; afterwards as Provost-Marshal, in which capacity he served five years. A year later he was elected Captain of Troop D, First Battalion of Cavalry, resigning after two years' service.

His business career commenced in 1865, when he entered the employ of Batchelder Brothers as a clerk. He remained with them until 1868 when he entered into partnership with Charles F. Newell, under the firm name of Newell & Burnham, succeeding to the coal business of William Wood & Company, No. 132 Charles Street. This partnership continued until 1871 when Mr. Newell retired. The firm then assumed the name of L. G. Burnham and Company, and in 1898 consolidated with five other firms, forming the Metropolitan Coal Company, Mr. Burnham being the first president. He retired from the coal business in 1899.

He then accepted the position of vice-president of the United Fruit Company, which office he held until he retired from business on account of ill health.

Mr. Burnham was very active in different social organizations, filling the office of president of the Boston Chamber of Commerce, Boston Associated Board of Trade, and the Boston Coal Club. He was also an active member of the Merchants' Association, and of the Commerce, Algonquin, and Country Clubs. He was appointed by Mayor Quincy a trustee of the City Hospital, which office he held at the time of his death. He was a member of Washington Lodge, Free and Accepted Masons of Roxbury, and an active worker in the Second Church. In politics he was a Republican.

Mr. Burnham was married in 1881 to Mrs. Mary E. Wood, of Lowell, Mass., who survives him. He resided on Bay State Road, and his summers were spent at his extensive farm in Essex, in the improvement of which he was much interested, setting out fruit trees and beautifying it with shrubs and flowers. The day before his death he drove twenty miles to procure ornamental shrubs to further beautify it.

From the very intimate relations with him during his army life the writer came to know him as a man of unblemished honor and of strict integrity. He was of a very pleasant personality, and as a soldier ever ready to do his whole duty though surrounded by perils and danger.

Resolved, that we deeply mourn the death of Mr. Burnham and extend to his family our heartfelt sympathy, and that this memorial be placed upon the records of our Society and that a copy be sent to his widow, and to his aged father.

AARON LOW,
BENJ. P. WARE,
H. G. JORDAN,
Committee.

On motion of Thomas J. Grey it was voted that the memorial be accepted and entered upon the records of the Society.

The President appointed the following members a Committee on School Gardens and Children's Herbariums for the current year:

HENRY L. CLAPP, *Chairman.*
W. E. C. RICH, *Secretary.*
MRS. H. L. T. WOLCOTT,
MISS KATHARINE W. HUSTON,
CHARLES W. JENKS,
HENRY S. ADAMS,
WM. P. RICH.

On motion of Mr. Spooner it was voted that when this meeting adjourns it be to the first Saturday in March.

The following named candidates, having been duly recommended by the Executive Committee were, on ballot, elected to membership in the Society:

CHARLES M. LIBBY, of Medford.
DAVID LUMSDEN, of Jamaica Plain.
ALEXANDER CARR, of Pride's.
H. H. ROGERS, of Fairhaven.
B. VAN HERFF, of New York City.
PROF. F. A. WAUGH, of Amherst.

William N. Craig referred to the recent death of two members of the Society, Mrs. F. L. Ames and Frederick L. Harris, and it was voted that committees be appointed to prepare suitable memorials.

The President appointed as a committee to present a memorial of Frederick L. Harris, William N. Craig, Thomas J. Grey, and Joseph H. Woodford.

The committee to prepare a memorial of Mrs. F. L. Ames he would announce at another time.

The meeting was then adjourned.

WILLIAM P. RICH,
Secretary.

BUSINESS MEETING.

SATURDAY, March 7, 1903.

An adjourned meeting of the Society was held to-day at eleven o'clock. President HADWEN presided and there were twenty-four members present.

The President appointed as a committee to prepare a memorial of the late Mrs. F. L. Ames, Dr. Henry P. Walcott, Gen'l. Francis H. Appleton, and William H. Spooner.

The Treasurer's Report for the year 1902 was read by Charles E. Richardson, Treasurer, and on motion of Mr. Spooner, it was voted that it be accepted and referred to the Committee on Publication.

The following named candidates, having been duly recommended by the Executive Committee were, on ballot, elected to membership in the Society:

HENRY J. THAYER, of Boston.
RUSSELL ROBB, of Concord.
HOWARD WILLIS PRESTON, of Providence, R. I.
JUDGE SAMUEL R. CUTLER, of Revere.
WALTER D. ROSS, of Worcester.
ABEL S. WOLFE, of Auburn.
J. LEWIS ELLSWORTH, of Worcester.

William N. Craig, Chairman of the committee to prepare a memorial of the late Frederick L. Harris, reported as follows:

In Memory of Frederick L. Harris.

Frederick L. Harris of Wellesley, Massachusetts, whose death occurred on January 11, at the advanced age of eighty-one years, was of English parentage and, after receiving a first class training at some of the best establishments in Great Britain, came to America at the age of twenty-eight.

He first settled at St. John, N. B., where he remained about three years, coming in 1853, to be head gardener to the late H. Hollis Hunnewell of Wellesley, surviving his employer by a few months only.

For the long period of forty-six years, Mr. Harris coöperated and worked indefatigably with Mr. Hunnewell in the establishment of the beautiful estate at Wellesley, which has no superior on this continent, and with which the name of our departed brother will long be identified.

As an all round practical gardener Mr. Harris stood in the front rank of his profession, and his skill as a cultivator was attested by the numerous medals, certificates, and other premiums, won before the Massachusetts Horticultural Society, during a long term of years.

He was for thirty-seven years a member of the Massachusetts Horticultural Society, joining in 1865, and the services he rendered to the Society during his life time, and to the cause of American horticulture generally can hardly be estimated.

He stood for everything that was elevating and noble in horticulture. His extreme modesty, his earnest sympathy for those struggling to rise in their calling, and his always warm-hearted welcome to visitors, endeared him to all who knew him, while the stimulus he gave to those who were favored to work under him, and with whom he was constantly thrown in contact, can hardly be estimated.

The weight of advancing years caused Mr. Harris to release his charge of the Wellesley estate about two and one half years ago and to seek a well earned rest. His death occurred after a somewhat lingering illness, borne with his usual exemplary patience, and the gathering of friends from far and near when he was taken to his last resting-place, attested to the universal esteem in which he was held.

Resolved, that in the death of Frederick L. Harris, the Massachusetts Horticultural Society and American horticulture have lost a stalwart friend, who ever labored diligently for the upbuilding of his profession.

Resolved, that this Society extends its sympathy to the family of the deceased, and that a copy of these resolutions be forwarded to his family, and spread upon the records of the Massachusetts Horticultural Society.

William N. Craig,
Thos. J. Grey,
Jos. H. Woodford,
Committee.

On motion of Mr. Spooner it was voted that the resolutions be adopted.

On motion of Kenneth Finlayson, it was voted that a committee of three be appointed to draw up resolutions in memory of the late Benjamin Grey of Malden. The President appointed as the committee, Kenneth Finlayson, Patrick Norton, and David F. Roy.

On motion of Mr. Spooner the meeting was dissolved.

WILLIAM P. RICH,
Secretary.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 10, 1903.

A meeting for Lecture and Discussion was held to-day at eleven o'clock. President HADWEN presided and the following lecture was delivered:

REMUNERATIVE OUTDOOR OCCUPATIONS FOR WOMEN.

BY MISS MARY E. CUTLER, WINTHROP GARDENS, HOLLISTON, MASS.

It is a matter of common remark that the second half of the past century has witnessed a tremendous extension of the sphere of women's work.

While clerical and stenographic employment on the one hand and factory labor on the other have furnished the chief fields for this extension, still, almost every department of business has experienced the infusion of the new element, even the professions opening their doors, and women doctors, lawyers, and clergymen becoming by no means uncommon.

Agriculture is no exception to the rule.

The world has not heard so much about the woman farmer,

but she exists and flourishes, indeed, is increasing and multiplying upon the face of the earth.

The violent manual labor involved in field work possesses no attraction for American women; but in many branches of farming, horticulture, floriculture, poultry raising, etc., women occupy a large portion of the opening.

Fifty years ago no occupations were open to them except cooking, sewing, teaching, and factory work. Few women were sufficiently educated to teach. Those who were, received from four to eight dollars a month and "boarded 'round," while men for the same service were given thirty dollars a month and board. In that day not even woman herself had so much as a dream of entering the professions of law, medicine, and theology.

When the genius of Harriet Hosmer impelled her to take up sculpture, she traveled from one end of the country to the other, begging for an opportunity to make the necessary study of anatomy.

When Elizabeth Blackwell determined to consecrate her life to medicine, not one of the standard medical colleges would admit her as a student, and society ostracized her.

The close of the nineteenth century found every trade, vocation, and profession open to women, and every opportunity at their command, for preparing themselves to follow these occupations.

A vast amount of the household drudgery that once monopolized the whole time and strength of the mothers and daughters, has been turned over to machinery; a money value is placed upon the labor of women.

Woman is no longer compelled to marry for support. In the world of literature and art women divide honors with men, and the civil service rules have secured for them thousands of remunerative positions under the Government.

What the woman of the twentieth century will be, I cannot say; one hundred years with the greater equality, the richer opportunities certain to come, will make her a being as much nobler, higher, and more gifted with every power for good, as the woman of today is superior in these qualities to her sister of a century ago.

Perhaps no department is better suited to woman's work than is that commonly known as glass farming, which is especially adapted to her for several reasons. First, it necessitates careful advance calculation, a matter in which women excel. Second, the physical labor involved is comparatively light, and so fitted to one whose strength is not robust. Third, in it there is room for much artistic taste and discrimination, certainly woman's specialties.

Glass farming, that is the use of plant houses, greenhouses, pits, frames, etc., is an ancient idea. We find mention of it in the Latin writers of the first century, Martial, Columella, and Pliny, and we have no reason to think that this was the beginning. But until recent years, glass farming has been regarded as a mere luxury, a pastime for the wealthy, rather than a practical method of supplying the world with necessaries. During the very years, however, in which women were entering the field of industry, this conception changed, and for the first time glass farming began to be regarded seriously as a department of agriculture.

Raising flowers in greenhouses for market is a profession for which women are proving themselves especially adapted. It is a business that has to be learned like any other; but, given a little experience, added to natural qualifications, such as perseverance, energy, and common sense, success is sure to follow. The plant I own and am running, was started on two hundred and fifty dollars, and I have built up a large, well paying business. With $250 and an acre of land, a practical woman in good health can earn a living for herself from the beginning and keep enlarging her plant all the time besides.

Given an acre of land, the first requisite is, of course, a greenhouse; a modest one can be built for one hundred dollars, and a rough heating apparatus put in for fifty dollars. The cost of plants and seeds is slight, as the large firms make easy terms to the trade, and the other expenses, such as tools, fertilizers, cold frames for starting plants etc., would amount to little on so small a scale. One great advantage is that the returns are so quick. With a greenhouse in running order by the first of September, crops of several kinds can be marketed before Christmas. The chrysanthemums come first, then follow violets, carnations, tulips, hyacinths, narcissus, calla and Easter lilies, spiræa, roses, etc.

The secret of success is to utilize every inch of space. In a vegetable house the tables can be filled with lettuce, cucumbers or tomatoes, while rhubarb and mushrooms can be grown in the ground underneath. A good head for planning is a necessity, as no time must be wasted between crops. It is necessary to know what kind of fertilizer suits each crop best. Some thrive best with bone meal, some with leaf mould or pasture turf. There are special fertilizers for special crops.

The location of such a venture as this is more than half its success. At first thought one would think that the neighborhood of a large city was the best place, but this is not necessarily so, as one is at the mercy of commission agents and middlemen. The best place is a small town or community of prosperous people, retired tradesmen, who do not travel, but make their homes there all the year. Flowers in a prosperous community you do not have to market; customers will come to you for them. I sell all my flowers at my greenhouses. Parties, receptions, and weddings are constantly taking place. The profit is in decorating and set pieces, rather than in cut flowers. A great advantage in this profession is that there is so much room in it for originality and taste.

A branch in which a great deal of money can be made is in the sale of plants; all kinds of bedding plants are wanted in May and June for lawns, parks, cemeteries, cottages at the seashore, vases, and wayside nooks. Pots filled with two or three California violet plants in bloom brought seventy-five cents in this city last month, and pansies are in demand in their season. Ferns, palms, and orchids grace your dining rooms, churches, etc.

The filling of window boxes and the designing of new effects in jardinières and hanging baskets is a line in which a woman can be very successful. The rose in all its colors is one of the most profitable flowers to grow under glass and the demand is great, for people must have them. The raising of roses is a much more difficult branch of the business and should be taken up only after a certain amount of experience. When this is gained considerable money may be made in it.

Did you ever stop and think where and how the beautiful flowers were grown? The flower business has great prizes to offer if one is of an investigating turn of mind. The large

amount of money that was received for the Mrs. Lawson carnation is inspiring to one thinking of going into the business. It is wonderfully interesting to create new flowers, to make those bloom double that have heretofore been single, and to paint the lily a new color; it is really scientific work. It is adapted to women, and so profitable has it generally proved, that it is strange so few have taken it up.

If a woman decides to take up flower and vegetable culture as a profession she ought, if it be possible, to fit herself for it by a previous course of study in some agricultural college; she should be familiar with botany and chemistry. If she has a chance to travel and study the flora of other countries she has the greater chance of making a name for herself. Miss Myra Dock, of Philadelphia, is an illustration. She was sent out by the park commissioners to study the park system in Europe. Trees should be studied as well as landscape gardening. Perhaps some day women may be park commissioners and parks today show the need of some new element in that department of civic life.

The demand and supply for carnation pinks never was so great as at the present time. Women are raising them all over the country with great success. I am engaged in growing pinks and grow them for profit as well as pleasure. Miss Evelyn B. Taylor, a florist of Milford, Mass., has two carnation houses, one 37 by 19 ft., another 87 by 26 ft. She gives all her time to the work, propagating and growing her own stock, and caring for the houses. She has found a market for everything in her own town, which is much more profitable than selling on commission. She has perfect health, enjoys her work, and supports her mother and father.

In these progressive times the handle of the agricultural tool is coming to know the grasp of the woman's hand, almost as well as the needle or the broom, and many women are making reputations as farmers of progress. Among the agriculturists are wives, widows, and maidens, women who have begun with small means, and women of wealth who have entered the ranks for the pleasure they could get out of it, or for philanthropic purposes. One and all are bright, intelligent women, and the large majority

are educated and cultured. Some are in partnership with men, others own and manage farms for themselves, while many manage farms for other people. Careful investigation shows that these women have distinguished themselves by their skill and executive ability.

In some important specialties, such as flower-seed growing, poultry raising, fancy dairying, and the growing of raisins and nuts, they have been successful pioneers. Their farms are scattered all through the country, on the uplands and in the lowlands, among the valleys, and even on the mountain sides. They are found in the largest numbers in Maine, New York, Pennsylvania, Ohio, Michigan, Minnesota, Wisconsin, Kansas, South Dakota, and California. Some are cultivating their thousands of acres, using the steam engine as a plowman. The majority conduct farms of more than 100 acres, while a few are contented with a single acre, depending on the spade and hoe.

Women lead in poultry culture in which they began a decade ago and it has been an uphill struggle against prejudices. Few, it is said, make a failure of it and the time, they claim, will soon come when women will control the industry here in America. It pays a greater interest on the investment than any other branch of farming.

The notable success of the few New England women farmers, proves conclusively that education and brains are needed in the business. Two young women in Compton, R. I., are examples of college graduates going directly into outdoor work. These women saw a chance to make money by supplying Newport's epicures with dainties. Their spring lamb, young geese, and hothouse grapes bring fancy prices, and there is n't an "ology" that they studied but contributes in some way to their success.

Now that Secretary Wilson is studying over New England's abandoned farms to see what they need to bring them back to fertility and prosperity, he might do worse than advise giving these deserted acres into the care of women.

A flourishing little farm of three acres on the north end of Lake Champlain produces yearly more than two and a half tons of honey and fifteen hundred ducks, besides quantities of fruit which is marketed at the neighboring summer hotels. It is

owned and run by Miss Frances E. Wheeler, for several years a stenographer and typewriter. It seems quite a change from a stenographer's place in New York to the ownership and superintendence of a duck and bee farm. Yet in looking backward, the sense of harmony deepens between the two occupations. I have grown to understand that it does not so much matter *what* we do, as *how* we do it; that the qualities required for a successful stenographer are equally necessary for a duck and bee rancher. In both callings, if success is to be attained, ignorance must be overcome by perseverance, tact, and common sense. After several years of office work, Miss Wheeler's hands became disabled, and the problem arose how to save the little family home at Chazy, N. Y., with its bee plant.

Many women have been successful in growing tomatoes in hothouses, starting them in the fall from seed. For the house-grown product the prices are high, and they continue to yield good profits to the grower until shipments begin to arrive from the South. There are but a very few varieties suited for forcing, among them are the Early Essex and Aristocrat.

It may be of interest for you to know where this plant, the tomato, was first grown in this country. The story is told, that a good many years ago, a man recently arrived from the Bermuda Islands, was committed to a Pennsylvania jail. He had with him a few seeds, which he planted in the jail yard, but before the plants came to maturity he was discharged. The plants bore a strange fruit, which, as it ripened, changed from green to red, and was greatly admired by the prisoners. The matron of the jail, sure that it was poisonous, cautioned all the inmates against eating the fruit, but as she desired to save specimens of it, she planted some of the seeds the following spring, and just as the fruit was well ripened, the man from Bermuda revisited the jail, and asked to see the plant. He called for pepper, salt, and vinegar, and to the astonishment and horror of the spectators, ate the fruit with a relish. Having finished, he told them that this strange fruit was a tomato, or translated into English, a love-apple, and that it was wholesome and nutritious. The seeds were therefore carefully preserved and distributed among friends and neighbors, who cultivated it as a curiosity, but it was long

years before prejudice gave way to appetite, and this now most popular vegetable came into general use. Even now many people remember it as an ornamental rather than useful plant. Probably more tomatoes are canned than any other fruit or vegetable, as they can be served in so many ways: eaten raw, with salt, pepper, and vinegar, or with a salad dressing, or plainly stewed in sauces, soups, preserves, and pickles. The tomato is ever ready for an emergency, and the provident housekeeper is sure to have it in reserve. One of the most successful tomato growers I know of is an English woman who grows them to perfection, and she always finds a ready sale for them at some of the leading hotels in this city. Under the tables can be seen beds of mushrooms, and she is as equally successful in growing that vegetable, giving all her time to this work.

It was a good idea conceived by this Massachusetts Horticultural Society, in offering prizes to the children for School Gardens and School Herbariums. The cultivation and observation of plants in school grounds and instruction upon them being of high educational value. Native wild plants, such as ferns, grasses, asters, goldenrod, violets, native shrubs, and economic plants, grains, vegetable roots, and leguminous plants, must be the stock of the gardens. The children are approaching the coming season with unbounded zeal and enthusiasm. This tends to cultivate a higher taste for the beautiful.

One essential to success in gardening is a love for it; but given this and intelligence to first plan carefully, and afterward carry out plans with perseverance, gardening will be found a successful, pleasant, and congenial occupation. Women are beginning to think about these things. Many of them could do much better at floriculture than to work for the very low wages paid for woman's work in the cities. It is not so much labor and muscle nowadays, as brains and machinery. Don't do your work first and your thinking afterwards, but think and plan first and then work.

It is said that the wives and sisters of the soldiers of the Twentieth Kansas Regiment, when the men were in the Philippines, went out into the deserted fields to work. The crops needed attention and there was no one else to give it, as nearly

all the members of the regiment were farmers, and there were hundreds of girls at work on the farms. It is hoped that women will not be driven into the fields by such circumstances, but that more of them will be led to realize that an existence spent in healthy, honest out-of-door work, is an existence which will enable soul and body to expand as well as the mind. Let me urge the women of this society and city to engage in more out-of-door work, and bask in heaven's sunlight; fewer headaches would be heard of and nervous prostration would be unknown. Have a flower or vegetable garden; take care of it all yourself and don't neglect it.

I have classified this subject into three parts, the first being — "Possibilities for certain women; what a few have done, and more could do."

I hope it is no egotism to state that in both the floral and vegetable departments of horticulture in which I have been engaged for the past seventeen years I have been entirely successful. You may wonder why I, a woman, should be engaged in this occupation; but I was brought up in the business of market gardening. My father followed it before me, and being led to it, both by circumstances and inclination, I naturally took it up. I must have had a strong love for the work or I should not have followed it as I have continuously until now.

I shall endeavor to show the business of gardening for women to be a profitable one. But let none deceive themselves by supposing that these profits are attainable without steady, personal application. My home of sixty-eight acres is located in Holliston, Mass., on the Boston & Albany railroad, twenty-five miles from Boston, thus being well located for gardening. The land slopes gently to the southeast and northwest, so that I can get two crops of early vegetables on the southeast slope, and peach orchards and later crops on the northwest. The branches in which I am most interested and engaged are flowers, vegetables, and fruits. Peach orchards occupy a large corner of my farm and have been a source of profit. When the trees are young, vegetables and small fruits can be grown between the rows, thus using all the available land. Apples, pears, plums, and small fruits I also grow for profit. A number of peach growers in my locality

have lifted mortgages from their farms by means of their peach crops. I am here today to extend to horticulture and floriculture the methods already employed in many other fields of industry.

Second — "Possibilities for all women; what many have done, and all can do."

It is not my aim or purpose to discourage or cause any of the thousands of women in this country who are engaged in other vocations to be dissatisfied with their lot, but it is to show those, who are endeavoring to solve the question of self support, that out-of-door occupations for women can be made profitable, provided they be carried on with steady personal application, without which there is success in nothing. As might be expected Vermont's best woman farmer turned her attention to dairying, and has reached very near the top notch in dairy fame. Mrs. Carrie J. Nelson, of Ryegate, Vermont, was left a widow with $1000 in money and as much more in a mortgaged farm. There were four children under eight years of age. In reviewing her work she says, "I did not have the courage at that time to put the $1000 into the farm and try and get a living from it, for fear that I might lose it, so I sold it to my brother-in-law, who lived in Boston, with the understanding that I should manage all his business here, and that he should board my family. At the end of five years I bought back the farm, thinking that if I could manage it for him, I certainly could for myself. I have always enjoyed my dairy work, striving to stand at the head, or as near to it as possible, in the quality of my butter."

Mrs. Nelson has taken the first prizes in the Vermont Dairymen's Association, Vermont Butter Makers' Association, Boston Food Fair, Vermont and New Hampshire Interstate Fairs, and the sweepstakes at the Vermont State Fair. She always hires the best help to be found, at whatever the cost, then she keeps the same help as long as possible.

Hundreds of women are earning pin money with poultry, early vegetables, fruits, jellies, pickles, etc. Those of you present who visited the Pan American Exhibition at Buffalo, N. Y., understand the meaning of my subject, "Remunerative Outdoor Occupations for Women." The march of improvement is onward and every day brings something new.

Third — "Possibilities for many Women; what some have done, and more can do."

In my neighborhood I know of a woman who gets a good living for herself and family by the cultivation of gladioli. She has a large garden of the choicest varieties and colors, sending them to Boston for sale in their season; and she also sells the bulbs. A woman living not far from this city has two long houses full of English violets, which, in the season, average her five dollars per day. She can support her family if her husband is not able to do so.

Where my gardens are today once was rocky land covered with bushes of all kinds; now a mowing machine can run over any part of it, and the result has been accomplished by nothing more than energy and perseverance. If I can get a good living and something more in sterile New England, and the soil of my farm is no better than that of thousands of others in Massachusetts, is it not an inducement and encouragement for those who live in the more fertile regions, from the Potomac to the Rio Grande, and from the Golden Gate to the Hudson, to engage in this same honorable occupation? We are living in a great age; history and our own experiences tell us, that in the last half of the century just passed we have witnessed some of the most wonderful inventions ever known. What great progress has been made in agriculture, in horticulture, in floriculture, in literature, in science, in art, and especially in medical science. What comforts and luxuries are enjoyed today by the humblest people that were unknown, even to the wealthy, a few decades ago.

I bring you words of encouragement for 1903; the springtime will soon be here when we must be up and doing. On the morning of a memorable battle Napoleon Bonaparte pointed his gleaming sword toward the morning sun, and said to the officers who stood about him, "Behold! behold! the sun of victory." May the same sun of victory shine on all connected with the Massachusetts Horticultural Society and all engaged in floriculture, horticulture, and agriculture, and may they be characterized, far and wide, for their harmony, contentment, and prosperity.

Discussion.

At the close of Miss Cutler's lecture an animated discussion followed, showing the great interest in the subject on the part of the large number of women present. Many questions were asked which were clearly and tersely answered by the lecturer. Mrs. E. M. Gill asked if the lecturer had experienced trouble with the dry rot in carnations, and if she had succeeded well in their cultivation. Miss Cutler replied that she had generally succeeded although there are always obstacles to overcome. Successive failures furnished experience which resulted at last in being able to know how to overcome them. The earth should be enriched every little while and worked over and liberally watered twice a week. The cold weather of the present winter had been a serious obstacle to overcome in greenhouse cultivation.

A lady asked if there was an opportunity for women who were not capitalists to learn the business, and if positions could be obtained at a reasonable salary in which to learn the business, and if one in starting out could make a living during the first year. The lecturer replied that she thought women interested in the work could find employment in seed stores, florists' establishments, and greenhouses, but it all depended, as in every department of industry, upon the tact and perseverance of the individual. Other questions and answers were as follows:

Do you repot plants in winter? Yes, when they need them.

In bringing your land to its present condition what fertilizers did you use? For general crops, Stockbridge fertilizers, for the greenhouse, pasture mould. Chimney soot should be used only around grape-vines.

How far apart should violets be placed? Nine by nine inches. Many women earn a living by the cultivation of violets.

Is there not some prejudice on the part of the public against women engaging in this business of the cultivation of plants and vegetables, and is not the work too heavy for women? I do not see how the public can help itself. Women have just as much right to engage in this business as men. A man can be hired to do the heavier and more laborious work.

What sources of information can you recommend to a person

about to start in the business? The best way is to learn by experience. No matter if you do make mistakes; keep right on and try again. Books sometimes mislead and are not always reliable.

What do you consider a good winter covering for an old-fashioned garden? Leaves, pine boughs, or any kind of coarse dressing. Roses need protection in winter by a straw covering.

Can anything be done in a region remote from a railroad? Railroad communication is not always a necessity. As was said in the lecture I consider a location near a prosperous town better than one near a large city. You are not then brought into competition with commission shippers of produce. Study your own market. It is a good thing to raise something to have all the year round, especially in winter.

Benjamin P. Ware was called upon and said that he was pleased to have the opportunity of listening to the interesting personal experiences of the lecturer. It was evidence and proof of what may be done by the women to improve their condition by entering into a healthful occupation.

Outdoor life conduces to health and strength and if more women engaged in it there would be fewer cases of nervous prostration and nervous headaches.

He hoped, however, that they would not go into the business in such numbers as to drive out the few remaining men engaged in it.

He called attention to Dr. Edward Everett Hale's three rules of life:

To be out of doors.

To come in contact with people.

To meet somebody every day wiser than ourselves and to learn something from them.

Regarding the last rule he thought it would be difficult for Dr. Hale to carry it out, the meeting with someone wiser than himself.

We have today, however, met with someone wiser than ourselves in the line of horticulture as the lecturer has shown us.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 17, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. President HADWEN presided and the following lecture was delivered:

SOME OBSERVATIONS AND EXPERIENCES IN BERLIN BY A MASSACHUSETTS FARMER.

BY BENJAMIN P. WARE, MARBLEHEAD, MASS.

Berlin is one of the largest cities in Europe, containing nearly two millions of inhabitants, and is rapidly increasing in population. It is by far the most beautiful city that I saw in my journey through several countries and is renowned as the home of kings and emperors for many centuries. There are in the city some half-dozen royal palaces, besides many others less pretentious. Among the most important is the Royal Castle, begun by Elector Frederick II, in 1443, which has since been enlarged and embellished by succeeding kings and emperors, until the immense structure contains over seven hundred apartments. Only a portion of these is open to the public at fifty pf. or twelve cents as admittance fee. Visitors are shown in parties through the palace by an official who eloquently describes, in German of course, its costly and elegant contents.

The entrance from the inner court is by a wide ascending passage to the second story with brick pavement, apparently to enable horsemen to ride up to the official reception room. Here the visitors are provided with loose felt slippers, so that the polished oak floors may not be marred, and they are first conducted into a long corridor, one wall of which is hung with immense tapestries, representing battle scenes, and so exquisitely wrought and shaded that it was very difficult to decide whether they were oil paintings or not. A piece four inches square is a day's work for a man at Gobelin, the home of the art. Other rooms are hung with portraits of the family of Frederick the Great and of all of the Prussian monarchs down to Frederick

William IV. There are also portraits of many of the old electors and other distinguished men.

Such decorations are common in most of the palaces of Europe. The Hall of the Knights is especially richly upholstered in silk-velvet decorations. One side is hung with immense golden salvers and large dishes, lighted up from behind by electric lights that show them to the best advantage, while from the centre hangs an immense crystal chandelier of surpassing beauty which, when lighted, would be of indescribable grandeur. The throne room is equally rich in decoration, and its gallery was formerly of massive silver, that Frederick the Great had caused to be melted into coin to aid him in the conduct of his wars.

The new chapel in the upper story, built by Frederick William IV, is beautifully inlaid with variegated stones, and the columns and pulpit are of different marbles of most elegant designs. All royal weddings are celebrated here, while the old chapel is used for other purposes, being a large room, furnished with crimson-velvet chairs and the walls hung with oil paintings showing the history of Jesus from Annunciation to Crucifixion. Such decorations may be found in several cities of Germany. This meagre description leaves very much of the interest and beauty attached to this palace unmentioned for want of time, but it gives an idea of many other palaces in and about Berlin, and also of a half-dozen others of great historical interest at Potsdam.

At Charlottenburg, a part of Berlin, there is a palace of the seventeenth century containing rare furnishings, which was occupied by Napoleon I after the conquest of Berlin. One night he was frightened by the striking of a clock, supposing himself betrayed by the Prussians. The Mausoleum near by, in the beautiful park adjoining, is approached by a walk between two rows of spruce trees, giving a sombre effect appropriate to the tombs of Frederick William III and his beautiful Queen Louisa, beloved by all Germany. She was taken as a prisoner by Napoleon I to France, and died in 1810 from the effects of the trials and exposure attending her capture. For this act the German people never forgave France. Besides these are the remains of their son Emperor William I and of his wife Augusta. Very beautiful, reclining marble figures of the four are in the room

over the vault, which is lighted by blue-glass windows, producing an effect upon the visitor of subdued solemnity. The heart of Frederick William I, in a marble casket, is placed at the feet of his parents.

Berlin is a city of monuments and some of the long avenues are lined with the marble statues of distinguished men, in equestrian, sitting, or standing postures. In public squares and in principal streets are grand equestrian and other statues, in bronze, of emperors, theologians, reformers, and others, too numerous to particularize. The city is rapidly extending its borders with wide streets and new buildings, the latter nearly all built of coarse brick covered with stucco, giving the appearance of marble. The style of architecture, as well as of the construction of all new buildings is under the control of a government commissioner, hence there is much uniformity in the appearance of the dwelling houses. The system of taxation is largely the income tax, wisely and strictly enforced, without fear or favor, a worthy example that Massachusetts may well follow. "Unter den Linden" is a wide thoroughfare that probably presents more of interest to a traveler than any other portion of the city. The entrance is through the Brandenburg Gate, built in 1789. This structure, which is eighty-five feet high and two hundred and five feet wide, is surmounted by a group of bronze figures emblematic of victory, consisting of a chariot drawn by four horses. The chariot was taken to France by Napoleon I as a trophy of war, but returned in 1815. This is a magnificent structure and is a fitting entrance to a street on which are located four or more royal palaces, and the university buildings, accommodating five thousand students, and having a bronze statue of Humboldt in the foreground. There are also many elegant buildings for foreign embassies, for residences, and for stores containing the richest goods. The Royal Museum, the old and new, is free to the public and contains a wonderful collection of the arts of ancient and modern times, ancient sculptures, many works of the old masters, Raphael, Rubens, Rembrant, Van Dyke, and others, who are represented by a large number of their best works. There is another gallery for modern paintings exclusively. Relics from Herculaneum and also from

ancient Egypt are here found in vast numbers. The old saying that there is nothing new under the sun is here exemplified by steelyards, such as farmers used thirty years ago, for weighing, and safety pins, large and small, of gold, silver, and iron, that are some thousands of years old. This vast collection of curiosities compares favorably with national museums in other countries of Europe. There are eight or nine other museums in Berlin of special technical collections of great value to the student. In one of them is the carriage built for Napoleon's use at his second coronation, elegant but small in comparison with that built for the coronation of George III, in 1761, which weighs four tons and is still in use.

The Royal Arsenal located on this street is exceedingly interesting to the visitor. It is a square building, each side measuring two hundred and ninety-five feet in length with a quadrangle adjoining of one hundred and twenty-five feet. At the front entrance are several gigantic bronze statues of emperors noted for military valor, and plans of fortifications and battle grounds, in high relief. This immense building is filled with weapons of warfare from the eighth century up to the present time; from the bow and arrow to the Mauser rifle; from the old smooth bore cannon to the latest rifled fieldpiece. There are figures of soldiers dressed in the fighting costumes of different ages, and of mounted officers arrayed in full uniform, all very systematically arranged, with plenty of room for inspection. Cannons and other trophies captured in the last French war, some showing the deep indentations caused by the opposing shot, are displayed under a glass-roofed court adjoining.

The Berlin Aquarium is considered one of the best in the world. It is in the form of a labyrinthian walk through a subterranean passage among volcanic caves, with stalagmites and stalactites curiously constructed, with alcoves and niches containing glass tanks of clear water, lighted by electricity, in which are the oddest rare fishes and sea anemones in great and beautiful variety. In a large tank was a diver enclosed in the complete armor and with the apparatus used in sea diving; in all, making an exceedingly interesting study.

The Porcelain Factory is another interesting place to visit;

founded by private means and afterward purchased by Frederick the Great, it is still continued under royal control. The whole process of manufacture from the grinding of the raw material to the finished product is open for inspection four days in the week. In beauty of design and elegance of finish, the ware now produced compares favorably with that of any other country. To an American it seemed incongruous to see big burly men decorating the dishes with a camel's-hair brush, and to look out of the window and see women cleaning the streets, as is common in Berlin and other German cities.

Of all the beautiful monuments in Berlin, there is none more imposing and artistic than the statue of William I, which was unveiled on the anniversary of his one hundredth birthday, March 22, 1897. It was designed by Professor Begas and built at a cost of four million marks. The beautiful peristyle in the background is surmounted at each end by a quadriga driven by the goddess of liberty, carrying banners aloft, representing North and South Germany. The equestrian statue of the great emperor forms the central figure, which is sixty-five feet high resting upon a pedestal decorated with exquisitely worked figures, and all forming a masterpiece of the sculptor's art. This is only one of the many monuments erected all over Germany to the memory of one of her greatest and most beloved rulers.

Among the many monumental columns, commemorating important battles and victories, the most imposing is that of the Column of Victory erected in memory of victories over the Danes and French and unveiled in 1873. On the summit is a figure of the goddess of victory which is forty-two feet high and the column itself is one hundred and ninety-eight feet high. At the base, on each side of a large square enclosing a large reception room, are bas-reliefs of battle scenes in bronze, most exquisitely wrought. By climbing up two hundred and twenty-seven steps to the outlook a grand and extended view of the city is obtained. Near by are the House of Parliament, approached by the castle bridge which spans the river Spree, the Royal Castle, and the Bourse. There is a bird's eye view of that magnificent thoroughfare, Unter den Linden, before spoken of, and a full view of the great Tiergarten, beginning near by and extending along the river

Spree two miles to Charlottenberg. It is four miles wide and was formerly a game preserve, but laid out by King Frederick I as a public park. It is a natural forest with drives and walks, kept in perfect order, permeating it in all directions. Thus we see a public park of eight square miles right in the heart of the city and unsurpassed in beauty and extent by any other in Europe. There are several other parks within the city limits notable for the fine taste displayed in their management and for the healthful effect upon the people.

While palaces, public buildings, boulevards, monuments, museums, art galleries, and parks are of great interest to travelers in foreign countries, and sources of learning, yet the people themselves, their characteristics, their methods of life, their art of living, are of equal or more interest. The German people are eminently social in their habits; there are beer gardens everywhere. Places of resort and entertainment are very numerous and largely attended and, in the mild season, principally in the open air. While most Germans drink beer, and it is of excellent quality, they do not guzzle it, as many do in this country I am sorry to say, but sit in companies, and smoke and chat and sip, possibly spending a half-hour over a single glass. An American is surprised at finding so many people engaged in this way, both by day and by night. Many places are crowded nearly all night and we wonder when they sleep or earn their living. At the theatres each seat is provided with a small stand on which to rest a glass of beer and there are waiters in constant attendance to furnish it. Notwithstanding this I saw no drunkenness in all Europe. How different the result of the saloons in this country, the reports of the police court will tell. In Germany our common custom of treating is unknown. There, if a company of men drink together, each pays for his drink. Here a company of young men or old resort to a saloon, one treats all round and they pass on to another saloon, someone else stands treat, and here it is guzzling not sipping, hence, when they have each treated all round, they are in common parlance, "full."

The narrative of my experiences in Berlin may be of interest to those who are thinking of a journey abroad.

On my arrival there I was disappointed in failing to find

friends who had not yet returned from America, and who had a residence in Berlin. So I found myself unexpectedly in a strange city, knowing on one, and unable to understand or speak a word of its language. My first desire was to find a hotel in the neighborhood of my friends' residence. With my only baggage, a gripsack in hand, I started in search of a temporary home on a principal street. I enquired of a German, who kept a fruit stand, if he would kindly direct me to a hotel. I will say right here that I received the utmost kindness and polite attention from everyone I met during the whole of my journey abroad. This good-natured German not understanding a word I said, stopped everyone that passed and asked of them if they could speak English, but no one could. By pantomime I was made to understand that if I would cross the street and go up to the third story of the opposite building I might possibly find some one who could. I went as directed feeling very doubtful as to the result. After crossing the street I stood waiting and considering the possibility of success by climbing up to the third story, when an exceedingly beautiful young lady approached me and said, "Sir, I can speak a little English." I asked her if she would kindly direct me to a hotel; she said that she was going that way and would conduct me to one, insisting upon taking my hand bag which, of course, was refused. I learned while chatting with her on the way that she was from Poland and was in Berlin to secure an education. Soon she stopped in front of an imposing building, and said, "Here is the hotel." She lightly tripped up the steps, touched the bell button, returned, clasped my hand with a "God bless you," and was gone. She disappeared from my sight as suddenly as if she had been snatched up to heaven, where she seemed to me to belong. I have since cherished her memory as my angel of light. I found the hotel satisfactory, except that I could neither understand nor be understood, and after the first meal at the table, they sent outside for someone to take my order who could speak a little English.

The custom in Germany is to sleep in single beds, and the bed covering is a tick filled with down, which when on the bed looks like a partially filled balloon. My first night's experience was quite notable.

I looked upon the balloon with some misgivings, as the tick is just the width of the narrow bedstead, and only as long as to reach from the footboard nearly to the pillow. In getting under it I was careful not to disturb its equilibrium. After a while I wished to cover my shoulders a little more so I gave it my customary "yank" and my bare feet were uncovered to an alarming extent, which caused me to suddenly give the thing a push towards the foot of the bed, when I found the upper part of my body much more exposed. This made it necessary to get up and rearrange the whole business. After again getting carefully adjusted in bed and nearly asleep, as is my custom I made a sudden turnover, and flop it went on to the floor, and then I was under the necessity of another rearrangement. Moral, when you go to bed in Germany keep still and the downy bed-cover will settle about you like the atmosphere, giving the delightful sensation of being tucked in by your mother.

The goose is to Germany what the turkey is to New England. It is not only the principal dish on festival occasions, but great quantities are in daily use. In Berlin from fifteen to thirty carloads of geese arrive daily, each containing twelve hundred geese. These are largely imported from Russia under very careful inspection. If a single goose is found diseased the whole carload is quarantined at the expense of the shipper for a limited time. Such as are not fitted for market are kept and fattened until they are. Others are nailed through their feet to the floor, crammed with concentrated food, and in about two weeks they become very fat, with greatly enlarged livers, which, though diseased, command the high prices that epicures are willing to pay in order to gratify their abnormal appetites. There is expended annually in Berlin for geese the sum of $3,500,000, thus making the common use of downy bed covering possible.

In passing a fine store with large plate-glass windows, in which was a beautiful display of large fat geese, I noticed several two-bushel baskets, one filled with the heads of geese, another with the feet, one with huge gizzards, and still another with the second joints of wings. These excited my curiosity. I went in and was politely received by one of the salesmen. I told him that I came in not to buy, but to look about his beautiful store. Pointing to

the baskets of offal, I said, "Of course you don't sell those. What do you do with them?" He did not understand me any more than I understood him. This we do not always consider. He, supposing that I wanted to buy, began to fill a paper bag. From the first basket he took a goose head, looking up to see if I wanted more. I shook my head, protesting that I did not want to buy the stuff, so he went on putting one from each basket into the bag, then did it up into a nice package and offered it to me. With considerable vehemence I again declared that I did not want it. He, thinking I came from the country at some distance and wanted a strong package, went and put on an extra wrapping, and again the third, notwithstanding my protestations, and then he made out a bill for ninety pfennigs (22½ cts.) which I took to the cashier's desk and paid without further parlance, leaving the bundle behind and feeling quite satisfied with my experience.

There is no better way for a farmer to judge of the products of a country than by visiting the markets. Berlin has fourteen market halls maintained by the city. One of the most important is the Neue, both wholesale and retail. It is a very large two-story building divided into small stalls for the retail trade, mostly in charge of women, and devoted to every kind of produce. Here are flowers, fruit, vegetables, fish which are sold alive, game, and meats of all kinds. In every department may be found a great variety and of all qualities and the stalls are crowded, making it quite difficult to get about. They have here what I never saw anywhere else, a clearance sale. About noon, goods that are a little *passé* are placed in a sizable space with a long bench or counter in front. An auctioneer stands behind and offers the goods, from a single duck, or goose, to a box of game, to the crowd of buyers. The articles are passed rapidly along the counter for quick examination, being bid upon at the same time and sold.

A clerk takes the buyer's name and the price for settlement and delivery after the sale. Thus in an hour large quantities of goods are sold to the mutual advantage of both parties. The seller disposes of what might be lost in another day or two and the buyer gets for a low price what is yet good.

The river Spree is used as a canal for the cheap transportation

of produce from long distances in the country to Berlin. I noticed a canal boat about one hundred and fifty feet long and twenty feet wide, deeply loaded in bulk with pears and apples. They were in bins of different sizes, in the hold, apparently belonging to different producers, and put in charge of the captain, who seemed to act as their agent for the sale of the produce. The fruit was taken from the hold in large baskets holding about a barrel each, handled with very little care, and sold from the deck to hucksters and other dealers. Of course, this fruit although coming directly from the orchard would soon decay and never be in its best flavor. This description may be applied to other farm products. There are, however, some choice fruits to be found in fancy stores. The demand for near by products is largely supplied by hand wagons drawn by a woman and a dog, or a woman and two dogs, which seems to be a whole team. It is astonishing what large loads they draw.

Family bread making is unknown in Germany and I think in all Europe.

Milk is sold about the city from tanks on wheels. These tanks are divided into three parts from which cream, skimmed milk, and whole milk are drawn from faucets as called for.

Dwelling houses are warmed by the same style of heaters that have been in use in Germany for centuries, consisting of a piece of masonry, two feet square and six feet high, covered with tiles more or less ornamented. This encloses a fire box very inconveniently arranged for use. There is very little wood in Germany and it is cared for with the strictest economy. Coal is used and also peat, compressed with hydraulic pressure into brick forms. These are sold for $1.75 per thousand, seemingly a very low price, but labor is cheap in Germany. There are in the German empire 4,942,000 acres of peat bogs and in Ireland 12,000 square miles, covering two-fifths of the whole surface of the country, apparently an inexhaustible supply.

The German people have the reputation of paying little regard to the Sabbath. My experience of a Sunday in Berlin shows that this statement does not apply to all. I attended service at the Kaiser William Memorial Church, the newest and most beautiful church in Berlin. It was dedicated Sept. 2nd, 1895, and

was built at a cost of five million marks. The chime of bells was cast from cannons captured in recent wars. It was on a perfect September morning, the sky clear and calm, the temperature perfect, the trees in full foliage, flowers in profusion, and all nature seemed to join with the spirit of God's service that prevailed. I met a middle-aged German who kindly approached me and though not understanding each other verbally, spiritually and by pantomime I learned his thought. That there is one God in heaven whose sun shines upon the American, the Englishman, and the German alike, He is our Father, we are brothers, and offered his hand. The church doors were opened at ten o'clock and the service began at half-past ten. The seats are wide oaken benches with backs all numbered allowing twenty-four inches each. While this is a free church of the Lutheran denomination (the popular sect of Germany) there are some seats reserved with the owner's name on a brass plate in front. During the half hour before service there is some confusion by the rush of people selecting their seats, as no ushers are present. At the altar which stands in the middle of a round alcove is a large marble statue of Jesus, exquisitely wrought and surrounded by beautiful emblematic stained-glass windows, lighted by six candles with two other candles in front.

The effect of this is very imposing. The service began with an organ prelude, then singing by a highly trained quartette, with no accompaniment to drown the sweet tones of the singers. Then music by a choir and a hymn sung by the whole congregation of some two thousand people.

Such a chorus of sacred song seemed to lift us to the very gates of heaven. Other music by the quartette and choir followed. Thus, for three-quarters of an hour, the service seemed to run itself, as no minister had yet been seen. The minister then appeared and began with prayer from the floor, and the reading of a psalm, with responsive singing by the whole congregation. The Germans are a nation of trained musicians and singers. The minister then took his place in a high pulpit on one side of the church. After the usual notices he read the scripture lesson, the audience standing out of respect to the word of God. Then came the sermon of twenty-five minutes preached without notes

and with much force and apparent eloquence. He then descended to the altar, made a short prayer, followed by a hymn sung by the whole congregation; the numbers of the hymns to be sung being posted all about the church. All voluntarily joined in silent prayer as the closing service, the organ playing as the audience retired.

The communion service which immediately followed, was conducted in the usual manner, by a short address and singing by the choir. Then as many as could knelt upon cushions arranged around the altar and the minister passed in front putting a piece of bread into the mouth of each communicant, after which he put the chalice of wine to the lips of each. They then fell back and others took their places, until all were served, about fifty in number. This method is the same as practiced at the passion play at Ober-Ammergau which I had the pleasure of seeing the next Sunday.

The Zoölogical Garden of Berlin which I visited that Sunday afternoon is probably unsurpassed by that of any other country in natural environment, and the good condition and variety of animals on exhibition. It is a veritable garden. From the entrance is a broad graveled roadway, about thirty feet wide, extending well into the grounds. On each side are beds of choice flowers and on the right are ponds stocked with waterfowl of every description.

In the midst of a natural forest growth of trees are located handsome brick buildings for the lions, tigers, bears, and other animals, with spacious iron-barred red cages attached for open air exercise and exhibition. There is a large and artistically designed brick building for three giraffes with plenty of room, and there are suitable enclosures for nearly every known variety of animal and bird life, a poultry yard, a sheep fold, and a deer park containing specimens of the different species. An effort has been made to give to every animal conditions as natural as is possible under confinement.

This garden is a place of general resort, with a large restaurant where drinks of every description, from milk to champagne, and food, from Frankfort sausage to the rarest game can be obtained. It is provided with acres of tables, each with four seats, for the

accommodation and service of the visitors who come in crowds on evenings, holidays, and Sunday afternoons. There are two band stands near by where full bands play alternately, so that the choicest German music is continuous. On that Sunday afternoon, about two o'clock, people began to come in. The usual entrance fee is one mark, but on holidays and Sundays it is fifty pfennigs, or twelve cents which is half price. They came singly, in couples, and in whole families, including grandparents, parents, and children of all ages, nurses with babies in carriages, all dressed in their best, and all on their good behavior. All was quiet and peaceful, no boisterous talking, and nothing to disturb the peace of the day. Everything was in harmony with the beauties of heaven above, and of the earth surrounding them. The seats at the tables were rapidly filled, and many families brought their own refreshments, ordering a cup of tea, a glass of milk, or more as wanted, while others would have such elaborate and costly viands as their means and desires required. Many were walking about, and crowds gathered along the broad walk, to aid and to see the little children taking rides upon the elephant, the camel, and in carts and carriages drawn by zebras, llamas, donkeys, and goats. After being fairly loaded, the animals would be led by their keepers up the walk and back, when other children would take their places in great glee and happiness. Did those people break the Sabbath or keep it in a rational way?

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 24, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. President HADWEN presided and the following lecture was delivered:

SYSTEMATIC POMOLOGY.

BY PROFESSOR F. A. WAUGH, AMHERST, MASS.

Amongst all the horticultural industries of this country pomology ranks first both in public interest and the amount of capital actually involved. It is necessary only to attend the meetings of the principal so-called horticultural societies throughout the United States and Canada to find that they are in most cases really pomological societies. Now this subject of pomology has received a somewhat one-sided development in this country due, of course, to the exigencies of circumstances. It is a one-sided development, however, which ought not to be accepted as final. We ought to do what we can to bring the subject into its proper balance.

The subject of pomology naturally divides into two parts. If we study the fruits themselves to ascertain their characters, their names, and their relationships, we are dealing with systematic pomology. If we study fruit growing, on the other hand, we are dealing with what we might call practical pomology, that is, with the practice of fruit growing. The term practical in this sense ought not to be construed as meaning that systematic pomology is any less *practical* than practical pomology.

We have already appealed to the testimony of the American horticultural societies. If we were to analyze their programs and follow their discussions we would be likely to find that the greatest interest of all during recent years, although manifestly pomological in nature, has not attached to either one of the branches already mentioned. The modern discussions have not concerned themselves with varieties, nor even with the methods of growing fruit, but have been most persistent and urgent on methods

of handling and selling fruit. These are the real problems which interest the average fruit grower of the present day. The whole color of pomological discussion has become commercial, and we have developed, therefore, another branch of pomology which does not primarily belong to the subject but which may be properly called commercial pomology.

I have already hinted my belief that commercial and practical pomology in this country have outgrown our knowledge of systematic pomology, and as I shall recur to this point again at the close of my address, I will dismiss it for the present with only another introductory word or two. Anyone who has had any experience with fruit exhibits or in dealing with the affairs of a horticultural society, or who has had occasion to use our modern horticultural literature to any extent, must have been frequently impressed with the remarkable scarcity of current descriptions of fruits, and with the utter inadequacy of those descriptions which he actually finds. Even in the experiment station bulletins, which are supposed to be constructed on broad, scientific principles, we find very few good descriptions indeed. In the horticultural society reports, which ought in particular to furnish a complete and systematic record of the introduction of varieties, we are treated no better. Descriptions of new varieties are very seldom given, and when they are attempted they are presented in the most vague and general terms and according to no formula at all. These are matters which could be easily corrected, and the fact that present conditions are no better in this respect is a strong argument in favor of the rejuvenation of the lost science of systematic pomology.

Systematic pomology, as I understand it, may be readily subdivided into three branches. These are (1) description, (2) nomenclature, and (3) classification. In order to study fruits we must first secure accurate descriptions of them, we must secondly decide upon correct and unequivocal names, and lastly we must classify these varieties in order to understand them best.

Descriptive Pomology.

Good judgment, born of natural ability and educated through experience, are necessary to produce the best results in the

descriptions of fruits. Not every greenhorn can give off-hand an accurate, reliable, and useful description. Judgment and experience, however, can be greatly aided by a suitable method for description; and a good method may even in some degree take their place. When I had my first lesson in this subject, I was provided by my teacher with a formula which I followed from point to point with the specimens in hand. This formula was of great assistance, even though, as I now believe, it was distinctly imperfect. The adoption of a comprehensive formula for description may be looked upon as the first step in systematic pomology.

It is requisite in the next place that the pomologist should supply himself with a suitable vocabulary of descriptive terms. We are not so poor in this respect as in others. We have very satisfactory nouns and adjectives with which to describe our standard fruits. Every man who has had much experience in this line, however, has found it necessary from time to time to coin some descriptive terms outright. As he works along from day to day he is apt to rely more and more on his own judgment to select and manufacture these descriptive adjectives, so that even having the best vocabulary as a beginning, the successful systematic pomologist is likely to make valuable improvements of his own.

Allow me to turn back now to the matter of the descriptive formula. It has been found best, as the result of considerable experience, to have this outline printed in the form of a description-blank. On this blank the various points to be described are entered in their proper order and vacant spaces are left into which the pomologist may enter his characterizations. Following are examples of a few of the blanks of this kind which we have in use at the department of horticulture, Massachusetts Agricultural College. Similar blanks have been brought into use in several of the other colleges and experiment stations in this country and in Canada. The Division of Pomology of the Department of Agriculture in Washington has also in use a much more elaborate blank, a sample of which I present also. So far as I know, there is not a horticultural society on the continent which has adopted any similar scheme.

APPLE

FRUIT: Form *size*

cavity *stem*

basin *calyx*

color

dots *bloom*

skin *flesh*

core *flavor*

quality *season*

TREE:

GENERAL NOTES:

Specimens received from *Described by* *Date*

Mass. Agric. College *Hatch Experiment Station* *Depart. of Horticulture*

Group *PEACH*

FRUIT: Form *size*

cavity *stem*

suture *apex*

color

dots *bloom*

skin *flesh*

stone *adhesion*

flavor *quality* *season*

TREE:

FOLIAGE: *glands*

GENERAL NOTES:

Specimens grown by *Described by* *Date*

Mass. Agric. College *Hatch Experiment Station* *Depart. of Horticulture*

Group *PLUM*

FRUIT: Form *size*

cavity *stem*

suture *apex*

color

dots *bloom*

skin *flesh*

stone

flavor *quality* *season*

TREE:

FOLIAGE:

GENERAL NOTES:

Specimens grown by	*Described by*	*Date*
Mass. Agric. College	*Hatch Experiment Station*	*Depart. of Horticulture*

STRAWBERRY

FRUIT: Form

size calyx

core texture

external color

color of flesh seeds

flavor quality

season shipping quality

BLOSSOM: general character sex

PLANT: vigor runners

foliage rust

GENERAL NOTES:

Specimens received from	Described by	Date
Mass. Agric. College	Hatch Experiment Station	Depart. of Horticulture

United States Department of Agriculture.

DIVISION OF POMOLOGY.

POMOLOGICAL NOTES.

SECTION C. BRAMBLES. Date of Receipt,_____

Blackberries, Raspberries, etc. " " Description,_____

No. of receipt, _____ Journal page,_____ Volume,_____

Name and address of sender,_____

Species,_____ Name,_____ Purpose,_____

Condition at time of receipt,_____

Season,_____ classification,_____

Form; general,_____ vert. sect._____ cross sect._____

Size,_____ dimensions,_____

Arrangements of blossoms and fruit,_____

Stem; length,_____ character,_____

Receptacle; adhesion,_____ character,_____

Calyx; size,_____ number of sepals,_____

adherence,_____ color,_____

Surface, regularity,_____ gloss, etc._____

Color,_____ permanence,_____

Drupes; arrangement,_____ character,_____

Comp. number,_____ size,_____ color,_____

Seeds: comparative size,_____ hardness,_____

Fungous or insect damage,_____

Flesh; color,_____ texture,_____

solidity,_____ firmness,_____

juiciness,_____ shipping quality,_____

Flavor,_____

Aroma,_____

Quality,_____

How illustrated,_____

Notes,_____

Sketch.

Plant.

Herb. arrange.,_____

How grown,_____

Vigor_____

Habit _____

Canes,_____

Flowers,_____

Date of bloom,_____

Leaf; { form,_____ leaflets,_____ / size,_____ color,_____ / margin, _____ petiole,_____

Productiveness,_____

Hardiness_____

Susceptibility to disease,_____

A few general comments on these descriptive forms may make their purpose and use more clear. It will be seen that the name of the varieties is commonly placed at the upper left hand corner where it will be most conveniently seen. In the upper right hand corner is the word apple, pear, gooseberry, or whatever it may be, designating the class of fruit described. This is almost a necessity in keeping up a large series of descriptions because the blanks must often be handled by inexpert persons who do not know whether Victor is the name of a pear, persimmon, or parsnip. In a set of blanks which I designed for use in the Vermont Experiment Station when I was a member of the staff there, I have put the apple descriptions on yellow paper, the plums on white, cherries on light blue, etc., with the expectation that this difference of color would make the assortment of descriptions easier. The result was rather gaudy and certainly striking, but I cannot say that it was a great success.

The most important suggestion to be made regarding the design of these description-blanks is that they should be of a definite and uniform size, preferably five by eight inches. I am aware that this size is rather meagre for the entry of a complete description, especially if there are many general notes to be included. It will usually answer the purpose, however, and in case the space proves to be too small it is a simple matter to continue the description upon a second sheet of paper. The large sheets are much more difficult to handle and I feel sure, after having experimented with many different sizes and styles, that five by eight inches is a very fair compromise of all the requirements.

I have tried two ways of filing these descriptions. In pursuance of the simpler method, I have had the blanks bound in book form when they first came from the printery. The book is convenient in size, it can be inserted in a reasonably large pocket, can be carried into the field, or can be taken with one to fruit shows, horticultural meetings, and other places where there are interesting varieties to be described. In this way one is able to pick up a large number of descriptions which he might not otherwise get. I am sure that every enthusiastic horticulturist has felt that he carried away less information from a good fruit show than he was entitled to, and he has doubtless thought within

himself that if he had had some good method of taking notes of the varieties which he saw exhibited he could have done better. This way of having description-blanks in book form and of desirable size for carrying in the pocket serves this purpose very well indeed. For the average fruit-grower who does not care to keep very many descriptions and who would not think of undertaking an elaborate filing system, the simplest and most convenient way to preserve these descriptions is to have them bound up in covers.

As soon as the work of descriptive pomology begins to assume anything like considerable proportions, it becomes necessary to adopt some other system. The one which naturally suggests itself and which is undoubtedly the best is the card-catalog system now applied to almost all lines of business. This is the system which is in use at the department of horticulture at the Massachusetts Agricultural College, and to the best of my information in all other colleges and stations where systematic pomology has been put upon a business footing. It is with this method of filing in view that I have particularly recommended the five by eight inch blank. All the manufacturers of card-catalog cabinets and apparatus keep in stock a standard cabinet having drawers of this capacity. The five by eight inch card is one of the standard cards and can be bought of these same supply houses. It may be had either blank or printed according to any desired form. For myself I am using a small four-drawer cabinet which I bought of the Globe-Wernicke Company here in Boston. Each drawer has the capacity of one thousand to two thousand cards depending upon the thickness of the sheets used, and the number of indexes required. The whole method of indexing and arranging these cards may be very readily worked out by each person for himself.

The larger and more elaborate blanks, already referred to as being in use in the Department of Pomology in the United States Department of Agriculture, are stored in Shannon files. Every business man knows what these are, and these also may be bought from the manufacturers who supply the various styles of filing devices to business houses.

Pomological Nomenclature.

It has often been remarked that one of the first necessities for the progress of a science is a stable nomenclature. In this respect it can not be said that pomology has thoroughly vindicated its right to be known as a science. Its system of nomenclature has not been all that could be desired. Even though the botanists and zoölogists often make themselves ridiculous in these matters they have at any rate a better system for doing it than we have in pomology. The only rules of pomological nomenclature which have received any official sanction from any horticultural body in America are the rules of the American Pomological Society adopted many years ago. These apparently were intended more as a guide for the labeling of the fruit displayed at the Society's exhibits than as a set of rules for controlling the practice of systematic pomology in the country at large. It will not be necessary to bring up these rules at the present time for analysis and criticism, but it may be said that the American Pomological Society has recently appointed a committee with a view to their revision.

In the meantime this whole subject of pomological nomenclature has come up for considerable discussion and suggestion in unofficial quarters. Two or three years ago there was quite an outbreak of discussion on this subject in the horticultural journals and important contributions were made to horticultural societies on this same topic. The most notable, because the most definite, results were secured by the Horticultural Club at Cornell University known more widely and familiarly as the Lazy Club. During the winter of 1898–'99 this question was widely discussed and an unofficial committee was appointed to draft a system of rules of nomenclature which might be suggested as covering the ground more fully. Professor L. H. Bailey and Professor John Craig acted on this committee so that there was really some talent represented. The present speaker had the honor of being one of the committee, and Professor S. A. Beach of Geneva, N. Y., was also present when the rules were discussed. Other men of horticultural reputation such as Professor S. W. Fletcher of West Virginia, Professor K. C. Davis of Wisconsin, and the late J. H.

Cowen of Colorado, also took active part in the formation of this set of rules. These rules were somewhat widely published and discussed outside the club in which they originated; and, although they have not received any official authorization from any state or national source, so far as I know, they are, I believe, the best expression of the fundamental principles of nomenclature which has yet been furnished in this country. Furthermore I think it not unfair to say that they represent more nearly the practice of the best systematic pomologists of this country than do the rules of the American Pomological Society.

Because this matter of nomenclature is of such great importance, and because a full and free discussion of it is especially desirable at this time, I shall present the Lazy Club rules for your consideration without further comment. I think it will not be necessary to explain the meaning of any of the rules or observations which follow them; and it will probably be entirely unnecessary to present the arguments for or against any of the particular propositions. It seems to me that since the thing now especially to be desired is the official recognition of some good rules of nomenclature, either those given herewith or something better, it would be especially becoming for the Massachusetts Horticultural Society to give this matter close attention. I most respectfully suggest, therefore, that the proper committee of this Society might do a real public service if it would give early and thorough study to this whole subject.

CODE FOR POMOLOGICAL NOMENCLATURE.

FORM OF NAMES.

1. The name of a variety of fruit shall consist of one word, or at most of two words.

In selecting names, simplicity, distinctiveness and convenience are of paramount importance. Pitmaston Green Gage and Louise Bonne de Jersey are neither simple nor convenient. Gold, Golden, Golden Drop, Golden Beauty, Golden Queen and Golden Prune, all given to different varieties of plums, are not distinctive.

The use of such general terms as seedling, hybrid, pippin, beurre, damson, etc., is not admissible.

Nouns must not be used in the possessive form. McIntosh's Red, Craw-

ford's Early, Bubach's No. 5, must be written McIntosh Red, Crawford Early, and Bubach.

Numbers are to be considered as temporary expedients to be used while the variety is under trial.

The name of no living horticulturist should be applied to a variety without his full consent; and the name of no deceased horticulturist should be used without the general agreement of living horticulturists.

An author publishing a new variety should use the name given by the originator, or by the introducer, or else should choose the oldest discoverable local name, providing such name may be conformed to these rules without loss of identity.

2. In the full and formal citation of a variety name, the name of the author who first published it shall also be given.

Names would then take such forms as the following: Summer Queen, *Coxe*; or Henry (Jerolaman); or Sophie (J. W. Kerr, Cat., 1894); or America, Burbank, *New Creations* 1898, p. 5.

It is expected that such citations of names will be used only in elaborate works on pomology, in scientific publications, or in cases where they are necessary for clear discrimination of synonyms.

PRIORITY.

3. No two varieties in the same group shall have the same name; and the name first published for a variety must always be used to designate it. All names subsequently published must stand as synonyms.

The term "group" as here used shall be held to designate the large general groups specified by words in common language, such as raspberry, plum, apricot.

PUBLICATION.

4. Publication consists in (*a*) the public distribution of printed name and description, the latter giving distinguishing characters of fruit, tree, etc., or (*b*) in the publication of a new name for a variety properly described elsewhere.

Such a publication may be made in any book, bulletin, report, trade catalogue, or periodical, providing the issue bears the date of its publication, and is generally distributed among nurserymen, fruit-growers and horticulturists.

REVISION.

5. No one is authorized to change a name for any reason except when it conflicts with these rules.

Classification of Varieties.

"Science is classified knowledge." This is the old definition and is undoubtedly a good one. If all our study of systematic pomology is to arrive to the dignity of a science, therefore, it must culminate in a reasonable classification. It is not sufficient for us to gather together a lot of miscellaneous information about varieties and to have our observations labeled with the correct names, but it is incumbent upon us to see that this information is scientifically arranged. Some system of classification is therefore the final and, perhaps, the most important step in our whole work.

We have been making some progress in the matter of pomological classification. Some of our varieties have been thrown into groups more or less homogeneous, convenient and satisfactory. Our knowledge of peaches for example has been greatly enriched by two recent publications of a systematic and classificatory nature. One of these is Professor Powell's monograph on the Chinese Cling group, and the other is Professor Hume's monograph on the Peen-to group. Each one of these writers has pointed out a number of varieties which are so closely related that they may be classified into a single group. There are other groups of peaches like those of the Honey type, the so-called native or Indian peach of Georgia, etc., which remain to be monographed; but at any rate the works of Professors Powell and Hume sufficiently exemplify the principle which we have in hand. Doubtless the plums have been treated to a more thorough ransack in respect to classification than any of our other fruits. We have no end of classificatory groups fairly well understood, such as the Domestica plums, the Japanese plums, the Wildgoose group, Chicasaw plums, Americana plums, etc., etc. It is rather odd that the work in classification should have progressed so much farther in this comparatively unimportant group than in other classes of fruits, such as apples, which are of more economic value and general interest. There is a reason for it, however, which may appear in the course of the discussion.

If one examines these classifications already cited and the others which have been devised for American fruits, he will find that

the most of them are practically botanical classifications and are not really placed upon a pomological basis at all. The distinctions are often drawn entirely from the consideration of species and have been worked out by the botanists for their own ends. This is particularly the case with the plums, which have originated from a large number of different botanical species.

If we take up some more homogeneous species, and one which is the legitimate property of the pomologist, such as the apples or pears, we shall find our present classification meagre and inadequate in the extreme. We very much need some system of classification for these fruits and the present dearth of our knowledge is evidently due, not to the fact that this need had not been felt, but to the large and imminent difficulties of the problem. The only general classification of apples ever attempted in this country has been that proposed by Dr. Warder in his famous book. Perhaps I ought to make some exception to this statement of the work of Thomas and one or two others, but the Warder classification is the only one which has gained any general notice. It is still used frequently for the want of anything better, but always with the feeling of its imperfections uppermost in the user's mind.

If we approach the subject of classification to see what its underlying principles are, we shall find that there are two systems, quite different from one another, but both applicable to any group of fruits. The Warder classification already mentioned may be taken as the type of the artificial method. According to this scheme, fruits are arranged in classes according to some one character at a time in which they accidentally agree. These characters are arbitrarily selected and the arrangement is, therefore, artificial even when most complete. The term artificial is especially justified by the fact that the varieties are not taken into groups according to their natural relationships.

Opposed to this method we have the natural system of classification which endeavors to place together those varieties which are most closely related by nature. It is assumed that those which have similar pedigree will for the most part show the largest correspondence in external characters, and though this assumption sometimes leads one astray it commonly conduces to

bring together those kinds which are really the most alike. The operation of the natural system of classification will be better understood if I cite one or two examples. Amongst apples we have the Ben Davis group of varieties including Gano, Black Ben Davis, Beach, and one or two others, all of them very much like the typical Ben Davis and several of them thought to be seedlings of that variety. These several varieties all agree in a large number of common qualities. They are naturally related. They are much alike. It is convenient to speak of them together.

We have also the Fameuse group of apples, containing a large number of varieties which are somewhat more plainly differentiated from other groups than those of the Ben Davis type already cited. In this group we have McIntosh, Princess Louise, Shiawassee Beauty, La Victoire, and several others.

If it were feasible to put all our apples into similarly marked and homogeneous groups according to their natural or apparent relationships, we might soon have a systematic and reasonable classification. There are many difficulties in the way, however, which seem to be almost insuperable. Undoubtedly much can still be done along this line and it is to be hoped that our American pomologists will give the subject the attention it deserves. But we may not deceive ourselves with the hope that the whole thing is to be cleared up immediately.

Before dismissing finally this comparison of the artificial and natural methods of classification, it may tend to make the subject clearer if we recall the fact that these two methods have both been extensively tested in botany. Those of you who are students of systematic botany will remember the enthusiastic and sometimes violent discussions which have gone on between the supporters of Linnaeus, Jussieu, and De Candolle, not to mention more modern names. The merits of these discussions have always centered on the comparison of the two methods of classification, the artificial vs. the natural. The student of systematic botany will remember further that botanical science in general has practically adopted a compromise of the two systems. The natural classifications like those of Engler and Prantl are followed very largely in the arrangement of books, herbaria, botanical gardens, etc., while in the construction of keys, indexes, and other short-

cuts for tracing up species the artificial method has been adopted. We see this nicely illustrated on a small scale in our Gray's Manual. To a certain extent the groups are arranged in a natural sequence; but at the beginning of each family or large genus we have an artificial key for tracing out unrecognized forms.

I mention these things not so much as matters of general interest, but because they point out very clearly the methods which we must adopt and which we must follow up probably for years before we shall have placed systematic pomology alongside of systematic botany where it belongs.

Conclusion.

I hope that the members of the Massachusetts Horticultural Society will not think me too officious if I make another somewhat personal plea to them. I am deeply interested in the progress of systematic pomology in this country. I have done what I could to have the subject taken up in a larger and more effective way by the colleges and experiment stations throughout the country. But it seems to me that the stronger and better endowed horticultural societies have a large and inviting opportunity to render aid. This Society holds some of the best and most notable fruit exhibits on the continent and has the opportunity, therefore, to secure many excellent descriptions of new and old varieties not only from this state but from other districts. I believe that the officers of this society, especially the secretary, are often called upon to identify varieties. This they could do much more expeditiously and satisfactorily if they had a suitable file of descriptions for reference. Moreover the specimens which are received from day to day in the course of this work might often be made the material for new descriptions and so the collection would go on increasing from year to year. A collection of variety descriptions like this in the hands of a pomologist is what a good reference herbarium is in the hands of a working botanist. I see no reason why the Massachusetts Horticultural Society should not become famous for its great collection of fruit descriptions just as the Gray Herbarium has become famous for its fine collection of types and local floras.

The general interest in pomology at the present time is so much attached to the practice of fruit growing that I feel compelled as a final word to assert the importance of systematic pomology to the business of the practical fruit-grower. If anything is evident from recent developments of fruit growing, it is that we require a more extended and intimate knowledge of the varieties which we handle. It is all very well to plant Ben Davis if a man likes that kind of fruit-growing. Ben Davis will succeed anywhere. It requires no intimate or expert knowledge of any kind. But if fruit-growing is put upon only a little higher plane and we begin to seek for varieties of higher quality which may be grown to perfection in different climates and under different circumstances, we shall find that much deeper study of the subject is required.

In order to get such knowledge as the present advance of practical horticulture makes necessary, we must proceed on some logical plan. We must in other words take up seriously the study of systematic pomology. A haphazard knowledge of varieties will no longer meet our needs.

Last of all I wish to remind you that all the great books on pomology ever written in America are really chiefly concerned with the systematic part of the subject. They are not, as we might suppose, treatises on how to grow fruit. The old books of Prince, Cole, and Kenrick, which ought to have been devoted to the practice of fruit-growing if any books ought to have concerned themselves with that subject, were for the most part descriptions of varieties. The great work done by Hovey, the Downings, Warder, Thomas, Manning, and the other great pomologists of America was done chiefly along systematic lines. The fact that these books have lived and have kept their influence to the present day ought to be some encouragement to us in going back to the subject of systematic pomology.

Discussion.

Benjamin P. Ware said that he would be glad to make some special inquiries of the lecturer. How much has been done towards this system of classification and how much progress has been already made in bringing it to practical use?

Professor Waugh replied that not much progress had been made, as the system of filing descriptions was begun only last August, but since that time five hundred forms had been filled out.

Mr. Ware continued, saying, that a system like the one proposed would be valuable to the Society, and a help toward the identification of fruits sent in. The problem is how can we get it and how can it be carried out? It is hard to identify fruits from Downing's book, which is not sufficiently clear, good authority as Mr. Downing undoubtedly was. Mr. Ware said that his point was how to get at the information and that he knew of no other way at present except to send our doubtful fruit to Amherst for identification.

E. W. Wood said that we can infer from the lecture this morning what our boys at the college are receiving. While we have this instruction for an hour they have it all the time.

In the matter of the nomenclature of fruits this Society has adopted as its authority the works of Downing and the reports of the American Pomological Society.

The importance of the matter of correct names of fruits we see very strongly at our exhibitions. Prizes are offered for certain named fruits and it is singular to see the names sometimes applied to the specimens. They come in under all manner of names and much of the fruit exhibited is wrongly designated. The question often arises, Shall we award the prizes for those exhibited under wrong names? Prizes are repeatedly awarded for wrongly named specimens. We should have accurate names for it is a satisfaction to know that the varieties exhibited are correctly named.

Sam'l H. Warren called attention to the proposed rule for omitting the use of numbers in the names of fruits. He said that this was his fiftieth year in the cultivation of strawberries and that he found the use of numbers very convenient in referring to certain new varieties.

To speak of the Bubach strawberry would not designate a particular plant as Bubach had produced seedling plants, which had been put on the market, numbered as high as 128, and his Number 5 had been especially well known.

Professor Waugh stated that the variety of strawberry mentioned was now known simply as the Bubach, the number "5" being dropped, as the other varieties were not now in general cultivation.

We ought not to keep a long series of numbers. We should send out new plants under new names and drop the numbers, as Rogers has done in his grapes, substituting names for numbers.

Thomas Harrison referred to the fact that the same variety of fruit cultivated under the same name in different localities is subject to great variation in quality and appearance.

The lecturer stated that it was a practice in general exhibits to show apples under the name given to them in their original localities, but in the fruit market it is the custom to draw fine distinctions; for instance, it has long been a question whether the Newtown Pippin and the Albemarle Pippin were really the same apple. He had investigated the matter and had found that they were both the same but from different localities, one growing in Albemarle, Virginia, and the other in New York State.

Look at the market reports and you will see State Greenings and Vermont Greenings, identical kinds, but the latter quoted at from fifty cents to one dollar a barrel higher.

Mr. Harrison asked if the lecturer had known any variations in grafted fruit. Professor Waugh replied that he had noticed several such instances and that one should be compelled to exhibit under the name of the graft but should explain the circumstances.

William H. Spooner called attention to similar difficulties in rose growing. The Jacqueminot and American Beauty roses are quite different plants grown in the open from those grown under glass. You will have to allow for differences in cultivation.

President O. B. Hadwen thought that the lecturer had a great work before him, as he had seen many different kinds of Baldwin apples growing on the same tree, and each kind would have to have a different description.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 31, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. Vice-President BENJAMIN P. WARE presided and the following lecture was delivered:

WHAT THE UNITED STATES DEPARTMENT OF AGRICULTURE IS DOING FOR THE FARMER.

BY PROFESSOR C. S. WALKER, AMHERST, MASS.

The human mind creates its own concepts. 'T is strange such difference should be between *a* farmer and *the* farmer. A particular individual from a distant hill town is *a* farmer, but he is not *the* farmer. The farmer to which our subject refers is a concept which our minds create.

A few years ago the junior class of the Massachusetts Agricultural College had its picture taken, not in a group of individuals, but in a composite photograph. Each man's face was photographed on the same part of the single negative; the result of thus superimposing one picture upon another was a portrait of no single person, but a composite photograph made up of the features of all, blended together in one. What the artist did in this instance the human mind is continually doing. Its concept of *the* farmer is different from *a* farmer. *A* farmer is ignorant; *the* farmer is intelligent. *A* farmer is lazy; *the* farmer is industrious. *A* farmer is a bankrupt; *the* farmer is successful. The mind summons before it a long procession of individual farmers, fixes its attention upon different traits and characteristics of these men, rejects much and retains many distinctive elements, out of which it constructs for itself the farmer, the typical farmer, the ideal farmer. This concept is a reality of great practical use. It is folly to say that, because the ideal farmer cannot be seized by the hand and led out on the platform to be seen and questioned, he is a myth and a delusion. The ideal farmer, the typical farmer, *the* farmer is a mighty force, making for the advancement of agriculture and for the pecuniary and moral

prosperity of each individual farmer within the realm of its influence.

So we know what we are talking about when we speak of the Massachusetts farmer, the New England farmer, the southern farmer, the western farmer, the American farmer. The human mind has created out of its New England farmer, its southern farmer, its western farmer a still more comprehensive ideal, involving the excellencies of each, which it has named the American farmer.

The human mind has contemplated the British farmer, the German farmer, the Russian farmer, the French farmer. Among these the American farmer stands out preëminently the intelligent, the forceful, the successful farmer of the world.

How does it happen that the American farmer has come to the front at the beginning of the twentieth century? These competitors of his started in the race generations before he did.

Out of many answers to this question one is worthy of our consideration this morning. Because of what the United States Department of Agriculture has done and is still doing for the American farmer, it comes to pass that he holds first place today.

But, what is the United States Department of Agriculture? What presents itself before your mind when I utter the long-sounding phrase, the United States Department of Agriculture? Is it a big blue book filled with pictures, figures, and words? Is it a man with a butcher knife stamping out the foot and mouth disease? Is it a big brick building in the city of Washington? Is it Uncle Jerry Rusk, leaning back in his chair in an inner room in that big brick building? Is it the present Secretary Wilson asking for an appropriation of $5,509, 540, for the benefit of the American farmer?

The United States Department of Agriculture is a phrase which stands for another concept of the human mind. It is an idea that is complex, but none the less real. It is more than buildings, more than a secretary, more than a group of men, more than an annual appropriation of millions of dollars. The department is an important part of the executive branch of the United States government. Its secretary is a member of the cabinet of the President. Men come and men go, old buildings give place to

new, one problem solved is followed by new perplexities, but the department is a vital organism which does not die. It is the best thought and determined purpose of the American people, efficiently applied to the solution of the problems of agriculture and to the promotion of its interests. While the department helps the farmer, the department is itself the product of the American farmer.

The Department of Agriculture under the direction of Hon. James Wilson, a member of the President's Cabinet, employs 3789 persons, devoting their time, talents, and strength to the promotion of agriculture. Of these, 2081 are scientists and assistants.

There are bureaus of animal industry, of plant industry, of forestry, of chemistry of soils, and the weather bureau. These are subdivided into many divisions. There are also independent divisions, offices, and sections, such as the section of foreign markets, the office of experiment stations, the division of statistics. For the support of these the government appropriated for the present year $4,503,960 in addition to $720,000 for the maintenance of the agricultural experiment stations and general printing expenses.

At the close of the eighteenth century the English landlords did much for the benefit of agriculture. Supported by the large sums received from the farmers for the rent of agricultural lands, they formed an aristocracy whose leisure time was given to devising ways and means for increasing the productivity of the soil. They succeeded so well that the production of wheat was doubled and the amount of general produce trebled.

In America the landlord system has never been established. The English farmer rents his land of the landlord, employs the agricultural laborer, while he himself furnishes, or borrows the capital, and is his own *entrepreneur*, or business manager. The American farmer on the contrary embodies all four functions in himself. He owns his land, being his own landlord, supplies his own capital, works as a manual laborer, and is his own superintendent. The average farmer, therefore, has little or no time to devote to discovering new methods in agriculture and no money to risk in experiment. His capital is too small to invest

in extensive improvement the profits of which cannot be at once realized. Again agriculture does not admit of coöperation, combination, and the forming of monopolistic corporations as do trade and manufactures. Hence the average farmer has been forced to sell in the cheapest market and to buy in the dearest market. He has not succeeded in securing for himself that share of the total product of wealth to which, it would seem, he is justly entitled. The remuneration of the banker, of the manufacturer, of the railroad man, of the merchant, of the professional man, of the miner, seems large in comparison with that of the tiller of the soil.

The modern captain of industry has at his command a corps of scientific experts to solve his problems for him and show him how to overcome difficulties. It is true that the individual farmer cannot keep a corps of scientists in his pay, subject at all times to his call. But what he cannot himself do, the government has already done for any and every farmer who has enterprise enough to avail himself of the work of the United States Department of Agriculture, carried on at an annual expense of over $5,000,000, for the solution of any and every problem the American farmer may propound.

The facilities of this great department are open to whomsoever chooses to avail himself of them. There is no obstacle the farmer has to confront which the department will not help him surmount. A corps of trained experts, equipped with the best instruments, is kept constantly at work for the benefit of the farmer in every department of agriculture.

Let us see now what the department is actually doing for the American farmer.

I. The department in the bureau of soils makes a study of the chemical and physical constitution of the soil. In the laboratory scientists investigate the relation of plant food to the growth of the crop and also what physical condition of the soil is best suited to the particular crop. Then surveying parties have been sent out into many states to examine the soil and make maps upon which are indicated the nature of the soil. This land is marked as suitable for fruit; that section as adapted to tobacco; this for figs; that for almonds. These surveys reveal the value of the

soil and its deficiencies, and what remedies should be applied, and what use may best be made of it. It shows how to reclaim alkali lands.

During the past year surveys of this sort have been made in twenty-six different states, of 14,541 square miles, at a cost of $26,551.

One of the most important parts of a farmer's business is that he should know the soil of his farm, what sort it is, what it is good for, and how it may be improved. It is very possible that a man may become poor on a most excellent soil, because he does not know its value nor how to utilize it. If he will make use of the hints and helps furnished him by the department, he may acquire an adequate knowledge of every part of his farm.

There was much discussion a few years ago of the abandoned farms of Massachusetts. What an excellent plan it would have been to have called upon the United States Department of Agriculture and have had it send one of its surveying parties to examine these lands, report upon them, and plot them upon maps. The surveyors would have told us which lands were suited for apples, where peaches could be grown; they would have discovered valuable tobacco lands; they would have indicated how the neglected areas might be best utilized.

In the Yazoo delta in Mississippi the surveyors discovered that the sandy loam is a typical early truck soil and that with the prevailing climatic conditions potatoes, or other truck crops, may be profitably raised. In Missouri it was found that the soils are remarkably uniform and that fruit interests may be extensively developed. In other states similar surveys have been completed. The surveys in Illinois have been so valuable that requests for more than 25,000 copies of the report have been made. No work of this sort has been done in Massachusetts since 1899, but next season it is proposed to spend three months surveying the Connecticut valley in the interests of the tobacco growers.

II. The department maintains a bureau of plant industry whose work is to assist the American farmer in his efforts to grow the best plants and protect them from destructive diseases.

Its first assistance is the procuring of good seed of profitable plants. Especial attention has been given to securing and

distributing forage crop seed, cotton seed, tobacco seed, and seed of other special crops. Agents have been sent to India, China, and Japan to get new seeds and plants for the purpose of introducing new industries to our country. Macaroni seed wheat has been successfully introduced from Italy. This has produced 2,000,000 bushels the past year. It yields from one-third to one-half more than our standard varieties and makes possible the growing of wheat much further westward over districts of great extent where wheat has hitherto failed to grow.

The introduction of new varieties of rice in Texas and other parts of the South has proved beneficial. The introduction of Japanese rice has resulted in the production of a crop worth a million of dollars and the investment of $20,000,000 in the industry.

The Jordan almond has been successfully introduced into California. The culture of tea in South Carolina is making good progress: 9000 pounds of marketable tea were produced last year.

This bureau of plant industry aims to be of especial assistance to the fruit grower. It is constantly studying problems connected with the production, cold storage, and marketing of fruit. It has conducted surveys to discover the best fruit growing areas in Virginia, Maryland, and Pennsylvania. What hastens and what retards the ripening of apples, peaches, pears, and other fruits kept in storage have been made the subjects of careful investigation.

It has also made an especial study of plant diseases. The cotton in the Sea islands of South Carolina began to die out. The planters appealed for help. A scientist was sent. He found that a fungous growth at the root was the cause. He was ordered to spend four years in that locality studying the problem until by selection and cross breeding he may produce a plant that is immune, or else find another remedy. The peach growers of Michigan complained of a new disease destroying their orchards. The department experts, taking a hint from the cotton disease, found a similar fungus at the root of the peach trees. To remedy this evil the department will import peach trees from Asia and from them develop a hardy stock that will be immune. To help the orange growers of Florida the department is engaged in developing a hardy orange tree that will endure the frost.

Another very useful office in the bureau of plant industry is that of farm management. The men employed collect the facts concerning the best paying farms in the country. They find out how these farms are managed, what are the conditions affecting them, such as proximity to markets, the nature of the climate, the land tenure, and methods of cultivation. They also take advantage of all the knowledge acquired by the several bureaus of the department and apply it to the necessities of the given case. Thus prepared they will make a working plan for a particular farm in a given locality. The farm that is thus managed becomes a model farm for that community. By such means it is hoped that the southern planter, the western farmer, and the New England agriculturist may be taught how to succeed in their occupation and keep abreast of the progress of the day.

III. The division of entomology has been of great assistance to the farmer in his fight to save his crops from whatsoever creepeth upon the face of the earth, and his live stock and poultry from parasites, and himself from disease and death engendered by the noisome mosquito and the pestilential fly. It goes even farther and endeavors to make insects the allies of the farmer in his endeavor to create wealth.

The fig fertilizing insect imported from Smyrna to California, has made it possible to produce tons of figs on the Pacific Coast. Japan and China have been explored and from these eastern countries the ladybird has been imported that it may help the farmer destroy that destructive pest, the San José scale. Dr. L. O. Howard, chief of the division, has spent the past summer in France and Italy studying the silk industry of those countries in order that he may teach the southern farmer how to cultivate mulberry plantations, breed silk worms, and reel the silk from the cocoons. From Austria and from Cyprus bees have been imported which have gathered a crop of honey double that collected by the best Italian bees. Moreover crosses have been made which have secured promising strains that make good honey and prove to be less irritable and more gentle in disposition.

It has been shown that the mosquito is the cause of much malaria in the human system and that flies may carry contagious

diseases from man to man and from beasts to humans. Methods of ridding ourselves of flies and mosquitoes have been discovered and the results published for those seeking information and advice.

The life histories of the Mexican cotton ball weevil, of the codling moth, of the bark beetle that destroyed 600,000,000 feet of pine timber in the Black Hills have been studied and remedies suggested. Work on insects injurious to shade trees, to truck crops, to stored products, such as flour, cigarettes, and tanned leather has been carefully conducted with good results.

Much has been accomplished in the testing of the various insecticides put upon the market. Many of these have been shown to be useless as well as expensive. It has been demonstrated that houses may be fumigated with hydrocyanic acid gas for eradicating household pests and for disinfecting apartments. But the gas must be used with caution and strictly according to directions.

IV. The biological survey has been carried on with the purpose of finding out the geographical distribution of mammals, birds, and plants as affected by climatic conditions. This survey discloses the curious fact that the biological zones in California often run north and south instead of east and west. In crossing the state from the coast to the interior one may traverse all kinds of climate from that of the desert of Sahara to that of the arctic region, with flora and fauna to correspond.

The destruction of coyotes and the larger hawks on the western plains has been followed by the multiplication of prairie dogs to such an extent as to cause great loss. How to get rid of these has been told in an article prepared by this division of the department.

The section of economic ornithology has shown which birds are the farmers' friends in helping him in his fight against destructive insects.

V. The bureau of animal industry is one of the most important in the department. To it is assigned the duty of investigating diseases affecting live stock and of discovery and applying remedies for the same. It inspects animals and animal products which are to be used for food and shipped from state to state

and to foreign lands. It is to promote the interests of the dairy and to advance the animal industries of the country. The bureau includes six separate divisions, each under the direction of a chief; also there are the experiment station and the editorial office. The editor prepares and publishes the volume annually which contains the report of the work of the various divisions of the bureau. The station is located at Bethesda, Md., on a small farm where is produced the serum for the cure of hog cholera and swine plague and conducts experiments with reference to Texas fever.

The work of the chief of this bureau, D. E. Salmon, in stamping out the foot and mouth disease in Massachusetts this past season, has made us familiar with the efficient and valuable service that is rendered to the American farmer when his flocks and herds are endangered by contagious disease.

The biochemic division employs a corps of scientists who are constantly preparing remedies for diseases and liquids for the production of flavor in butter and cheese.

The dairy division has for its chief, Henry E. Alvord, well known as a Massachusetts man, at one time professor of agriculture in our college. For a number of years he has been indefatigable in promoting the dairy interests. He has been of great assistance in establishing creameries, conducting dairy schools, enforcing laws for the protection of the dairyman, and extending the market at home and abroad for butter and cheese. During the past year experimental shipments of dairy products have been made to Japan, China, Cuba, and Porto Rico.

The inspection division prevents poor meat products from being sold in the markets and makes possible sales in foreign lands.

The zoölogical division studies the habits of parasites and the nature of diseases resulting from their attacks.

VI. The bureau of chemistry is one of the oldest bureaus of the department and its work is intimately connected with the work of all the other bureaus and divisions. It has a food laboratory, a sugar laboratory, a dairy laboratory, a road material laboratory, a dendro-chemical laboratory, and a laboratory for miscellaneous coöperation. The bureau has charge of all chemical work relating to agriculture. Its large corps of chemists is kept constantly at work.

The subjects of investigation include soils, fertilizers, and irrigation waters; agricultural products; insecticides and fungicides; the foods of men and of the lower animals; the raw material products, and processes of the agricultural chemical industries; the materials used in road construction; imported foods, and food products intended for export.

VII. The bureau of forestry is a recent addition to the department, created to meet the demand of the American farmer for help in preserving the forest so essential to profitable agriculture. The forest has been ruthlessly attacked by man and insects and fire. For the common good and for the preservation of our civilization the forests must be saved.

This bureau is composed of the divisions of forest management, of forest investigation, and of records. To meet expenses an appropriation of $185,440 was voted by Congress for last year. In the work one hundred and sixty-two men have been employed in forty-two states and territories. Advice is given to owners of forests who desire to have them managed in accordance with scientific methods. Plans have been prepared for the management of 372,463 acres. A plan is now in preparation for the management of a tract of 1,250,000 acres in southeastern Texas, the largest tract owned by a private party in the United States. The Secretary of the Interior depends upon this bureau for plans for the management of the forests owned by the United States.

Investigation of better methods of making turpentine has shown how the work may be done with less injury to the trees, than heretofore has seemed necessary.

A large collection of forest literature has been made and also a collection of six thousand photographs.

The bureau encourages the farmer to plant trees and renders valuable assistance in the work. There have been applications from two hundred persons for assistance in tree planting. Examinations of 200,000 acres have been made and two hundred and twenty-four plans for 6400 acres have been formed.

In New England the question of the possibility of planting cheap lands with white pine has been considered, and has led many owners of land to begin plantations of white pine.

This bureau has shown that the destruction of Appalachian

forests has caused a loss of $20,000,000 in twelve months, that mill privileges worth $20,000,000 are being destroyed; that soils are being washed away. To prevent these losses it is proposed that the government shall reserve large forest tracts on the mountains.

VIII. The weather bureau is now a part of the Department of Agriculture. Its forecasts of the weather have proved of great value to the farmer, warning him of frosts, of hail, of coming floods, of blizzards, of tornadoes, of all of those changes which affect favorably or unfavorably the work of the agriculturist. This bureau keeps a record of the condition of the growing crops in all parts of the country and reports weekly. Its data enable the farmer to form a reliable opinion as to the climatic conditions of any region which will make it possible or impossible to successfully produce a special crop in that locality.

IX. One of the most useful divisions of the department is that of statistics. John Hyde, the chief, has under his immediate direction one hundred and thirty experts and 250,000 correspondents. The correspondents write him from all parts of our country and from many parts of foreign lands. He keeps informed of all the essential facts relating to the condition of the various crops at home and abroad and as to the growth and products of live stock. Rates of transportation on cars and vessels are published. The range of prices is found out and reported. The services of this division are made use of to a great extent by middlemen and speculators, often to the detriment of a farmer who does not know that there is such a publication as the "Crop Reporter" packed with valuable information and printed every month for his especial benefit.

X. The office of public road inquiries has been doing a wonderful work lately for the farmer. It shows the cost of bad roads and the value of good roads; demonstrates the profit to owners of city property of money expended by them on country roads; organizes all classes of the people in a crusade for good country roads; tells what has really been accomplished in building good roads in different parts of the country and shows how other parts of the country may get the same advantages; discovers excellent road material in the immediate vicinity of the

poor highway; oyster shells in the South, trap rock in New England, gravel elsewhere; discusses new plans for road improvement and encourages experiments in the right direction.

Under its direction road conventions have been held in the southern states. Special trains loaded with all the best machinery for the construction of good roads and carrying a corps of skilled workmen and scientific experts and lecturers and business men have been sent from place to place giving object lessons in the construction of good roads. By such means the people of Virginia, Georgia, Alabama, Tennessee, have been astonished and delighted, and made converts to the determined movement for good roads and cheap transportation of passengers and products from the farm house to the market.

XI. The section of foreign markets, under its chief, Frank H. Hitchcock, has been for years working in season and out of season to extend the market for the products of American farms among all the nations of the world and to retain the markets already gained in spite of persistent attempts to drive American products out by means of a high tariff, or that feeling, by the pretext that the products are diseased and unwholesome and must therefore not be admitted beyond quarantine. In this work this section has been ably assisted by all the other divisions and bureaus of the Department. All have coöperated to this end so efficiently that during the past year the export of agricultural products amounted to $860,000,000.

XII. The office of experiment stations, under the direction of A. C. True, has in charge those matters which relate to the coöperation of the department with the many experiment stations in the several states, supported by federal grants, and with the land grant agricultural college. This office is the headquarters of these institutions which with their splendid equipment, liberal endowments, and trained corps of scientists and learned faculties are doing so much in the line of original investigation and in the way of the agricultural education of young and old. About forty years ago Senator Morrill of Vermont committed the national government to this wise policy of agricultural education and investigation. The results so far have abundantly justified his action and have won for him great honor. But at the close of one hundred years what magnificent results may we not expect.

The United States Department of Agriculture is not to be separated from these institutions. It includes them all. They and it are one. Each depends upon and supplements the other. The colleges furnish the department with scientists. The department is a post graduate school for the Bachelors of Science, and a field for the life work of the Doctors of Philosophy.

To this office of experiment stations has been assigned the investigations and work relating to irrigation and agricultural engineering. A great work is this indeed. It comprises no less a task than the transformation of the Great American Desert into a paradise, populous with a happy people. Men have been sent to Egypt to study the irrigation system of the delta of the Nile and the laws that secure the rights to water. Engineering problems relating to the storage, the transfer, the utilization of water for the production of crops have been studied, and, in a measure, solved. Shall the canals be cemented to prevent waste? How shall the destruction of farms by the absorption by water of alkaline deposits be prevented? Irrigation is called for in the South as well as in the West.

Irrigation has given rise to a demand for engineers to instruct the farmer how best to apply forces of nature to his service. How shall he utilize his windmill? How may he work with electricity? How can he get the most out of his water power? What machinery can be profitably used? These questions are constantly asked the department, so that it is driven to ask the government for a new division of agricultural engineering, with engineers who shall go to the farmer and show him how to harness the forces of nature and make them toil in the field for the production of wealth.

XIII. Lastly there is the division of publications. Its work is to publish the results of the labors of the department in all its various bureaus, divisions, sections, and offices. To do this work necessitates the employment of a large force of editors, proof-readers, compositors, artists, engravers, photographers, equal to that of our largest publishing houses. One item of printing last year was 3,345,000 copies of farmers' bulletins which give in popular form the most practical results of scientific farming. The Year Book of the Department of Agriculture, containing 846

octavo pages, profusely and beautifully illustrated and packed with valuable information, expressed in a clear and interesting style, could not be published by Harpers' for less than ten dollars. Yet it may be had for the asking by any farmer who appreciates its worth. But this is only one of its many volumes. Its list of publications would fill a volume and the books themselves make a library.

All this and more has the United States Department of Agriculture done for the farmer. This the department continues to do. In the future, as the years come and go, it will do more and still more for agriculture and the agriculturist. The territory of these United States, stretching from Behring Straits to Florida Keys and from Maine to Southern California, to say nothing of Porto Rico, of the Hawaiian and the Philippine Islands, constitutes a good sized farm. It belongs to the American farmer. It is capable of producing good crops, enough to feed and clothe and supply the growing needs of humanity. Our eighty millions shall become hundreds of millions. To provide for these is the work of the American farmer. It is no small task, but he is capable. The German farmer is a peasant. The British farmer is bankrupt. The farmers of all other lands are little better than serfs. It is the destiny of America to produce a farmer who shall hear the voice of God commanding him, "Replenish the earth, and subdue it."

The New England farmer found Massachusetts a wilderness, the home of savages, bleak and barren. He replenished it, he subdued it, and now it is the Old Bay State.

His sons crossed the Hudson, climbed the Alleghanies, spread out over the prairies, passed beyond the Mississippi, scaled the Rockies and the Sierras, and bathed in the Pacific Ocean. Behind him in his footprints grass grew, grain bowed its fruitful head, orchards and vineyards sprang up, flocks and herds multiplied, and homes were founded.

By replenishing the earth man best subdues it. He who subdues the earth conquers himself. The victor over self is a hero. He can do anything. Nature is on his side, his obedient servant.

The American farmer has wrought well. One of his best creations is the United States Department of Agriculture. He made the department: not the department, him.

But now the department, which he has formed, reacts upon himself as an instrument and means for his further development and higher education.

But how shall a farmer, the average farmer as distinguished from the farmer, make the most of the facilities freely offered him by the department of agriculture? He can at least do this: he can respect his calling and make up his mind that he will subdue his own farm by replenishing it. In this work of replenishing his own farm and subduing it, he may go into partnership with the department.

The department will help him classify the different types of soils; will show him what fertilizers are needed; will make plain what crops and fruits and animals may be raised to the best advantage; will help him understand climatic conditions and solve problems of irrigation and agricultural engineering; will make a plan for the improvement and management of his bit of forest; will help him fight insect destroyers and overcome the diseases that attack his plants and his live stock; will tell him where his best markets are to be found and assist him in building good roads and in securing cheap and quick transportation to and from his markets; will analyze his commercial feed stuffs and fertilizers and drinking water for him and prepare for him cultures for his butter and cheese and serum for his cattle; will provide new seeds and cuttings of foreign plants; will keep him informed of all the latest discoveries of science in its application to agriculture; will furnish him gratis with the latest and best publications concerning agriculture; and will put at his service a trained army of scientists capable of finding out all that needs to be known. Thus aided there is no reason why the owner of a farm may not in the course of time transform it into a home that shall not only furnish him and his family a livelihood, but shall become a delightful place to all beholding it. There is no reason why such a farm should not become an environment reacting upon the individual making him a country gentleman of culture and of a character, rightly esteemed the peer of any man.

Discussion.

The lecture was followed by an interesting and, at times, lively discussion, on the practical value of the agricultural college and of modern, scientific methods of cultivation.

Benjamin P. Ware, in his preliminary remarks said, that the farmers of New England are having a hard enough time to make a living by farming and that the United States Government is attempting to help them.

He thought we were fortunate in having the lecturer show us what was being done to aid the farmer, and that a good deal of information had been elicited.

A young man inquired as to whom he should apply for particulars concerning farm management, and for the government publications.

Professor Walker replied that letters may be directed to the Secretary of Agriculture, at Washington, and that they would be referred to the proper department. For special publications one should apply to the Congressman of his own district.

Varnum Frost spoke on the topic of the day substantially as follows:

I wish this scientific method of farming was as valuable as they are trying to make it out, but I can't see it. The United States Department of Agriculture spends five millions of dollars a year and supports four thousand employees. They get the benefit of it, while the farmer is growing poorer and poorer.

In fact scientific knowledge is not necessary for good farming. Running a farm is a simple business and can be learned by experience and observation — three-fourths of it observation.

There is no need of spending so much money as is being done by the government. I know of most successful farmers who cannot read or write.

Mr. Ware. In reply to our friend Frost, according to the statistics, not over four per cent of those engaged in mercantile business succeed. Does Mr. Frost know of a single farmer, who has attended to his own business, who became a bankrupt?

The time has come where there is no excuse for a farmer to make butter that has to be sold to the renovator for twelve cents

a pound when information is at hand that will enable him to get thirty cents for it.

A farmer today has no business to be an uneducated man. Facilities are freely offered him by the agricultural college; and the Farmers' Bulletins of the government are to be had for the asking. The money paid out by the government has been returned over and over again in the advance made in agriculture.

We do not want to go into a pessimistic discussion; it does not belong to the business, for farming is an optimistic employment.

The farmer of today should be an educated farmer, and there is no excuse for his being otherwise.

Mr. Frost. Do you think that the agricultural college can graduate a good farmer, ready to take up the work of a farm and to carry it on successfully?

Mr. Ware. Not only that, but there are hundreds of graduates who are already successfully occupying positions as superintendents and teachers, all over the country.

Mr. Frost. I have had students come to me from the agricultural college who wanted to go to work to learn the business. It is almost impossible to get a man who has been educated, who is willing to work on a farm.

Mr. Ware. They could not have gone to a better man of whom to learn the business.

Michael Sullivan. I do not like to speak in opposition to my old friend, Frost, whom I have looked up to from boyhood. When we speak of agriculture, here in Massachusetts, it is hardly worth while to compare it with that of the great West.

The work of the government is not especially valuable to the market gardener, although I have received good from it, but to the cultivators of special crops, on a large scale in the West, it is of great value. Mr. Frost takes a local view of the subject and while New England farming is not on the increase there is a living in the business today. I know men who not only make a living at it, but stand well as citizens in their respective towns, and also take a prominent place in the affairs of the state. The college at Amherst not only makes a man competent for his work but fits him for the higher walks of life. That is the kind of life I see for the New England farmer. I doubt if Mr. Frost seriously thinks as he speaks.

The Sabal Palmetto.
Isle of Palms, South Carolina. Photographed by Miss E. G. Cummings, March 23, 1902.

Mr. Frost. Farming is the tag end of all business, the last resort of broken down professional and business men who cannot get a living at their occupations and so turn to the farm as a last resort. I defy any man in Massachusetts to assume a liability of ten thousand dollars and ever be able to pay it up by farming. The business is growing less every year. What I have I earned forty to fifty years ago. There is no money in the business now.

Mr. Ward. I know of a man, a graduate from an agricultural college, who has been successful as a farmer and has made money. Things learned at the agricultural college, if the knowledge is used, will be a helpful aid to success.

Mr. Sullivan. I want to say this, I regard my farm as a savings bank into which I put the labor of every day, and it is a sure accumulation for my family.

Mr. Ware. Mr. Frost spoke one truth and paid a high compliment to farming when he stated, that when a man has failed in other walks of life, he turns as a last resort to the farm. Yes, agriculture stands open to receive him and grants him a success that he could not otherwise attain.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 14, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. President HADWEN presided and the following lecture was delivered:

CHARACTERISTICS OF SOME SOUTHERN TREES.

BY MISS EMMA G. CUMMINGS, BROOKLINE.

As we left New England in the bleak days of March, for a visit to the milder southern states, the first thing to attract our attention was the conspicuous amount of green in the landscape as compared with the prevailing brown tones of the north. The people of Virginia must have been fond of planting weeping

willows, and truly, their fresh feathery green leaves expanding so early are an attractive feature of the cities and towns. The woodlands are dotted with the deep pink blossoms of the Judas trees; a shade of pink that might not be called pretty in itself, but in combination with the green of the willows forms a pleasing scheme of coloring.

While there are other green trees than the willow, this is not entirely due to the warmer climate, where leaves open earlier, than with us, rather is it due to the fact that there are more evergreen shrubs and trees in the South. Many of these cannot grow in the North, others like the rhododendron, kalmia or mountain laurel which grow sparingly with us, clothe many a slope of the southern Alleghanies with green shining leaves, and along riverbanks the rhododendrons often make impenetrable thickets. More especially is there a greater variety of the broad-leafed evergreens, the most prominent trees being the magnolia, holly, (*Ilex*) live-oak, and palmetto.

The magnolia (*Magnolia foetida*) has been freely planted in the parks and gardens of Washington, and from there southward is both a prominent decorative feature of the cities, and conspicuous in the forest. Fine old trees of live-oak (*Quercus Virginiana*) are growing in Fortress Munroe and they entirely compose the Park along the water front in Charleston. The trunks usually divide a few feet from the ground and form many wide-spreading branches, often from one hundred to one hundred and fifty feet across.

In the early part of the last century the United States Government bought in the Gulf states large tracts of land covered with live-oak, because the wood was regarded as especially adapted to ship building; and large quantities of it were used in the construction of warships before the substitution of iron. Since the Civil War the reservations have been neglected, and occupied by people who cleared the ground for planting. In 1895 all the reservations, except those in Florida, were transferred from the Navy to the Interior department and opened to the public.

The most unusual looking tree to northern eyes is the palmetto (Sabal palmetto) which makes the traveler feel at a

glance that he is approaching the tropics, so associated in our minds are all palms with warm countries. The palmetto grows singly or in groups in the sandy soil of the islands and along the coast of South Carolina to Florida. In some protected places it is found in large groves, but seldom more than thirty to forty feet high. The trunks of young trees are covered with the sheaths of dead leaves which gradually fall off as the tree heightens, leaving a much-scarred surface, to show where the base of the leafstalk clasped the trunk.

The leafstalk is connected with the trunk by a series of threads or fibres. These descend in curves through the whole trunk of the tree, a structure peculiar to palms, interlacing with fibres from the other leaves in such manner as to produce great resisting power. The following story will illustrate this.

Palmetto trees did such good service in an important event in the early history of South Carolina[1] that the memory of it has been perpetuated on the coat of arms and on the seal of the state, which since then has been known as the Palmetto State. In May, 1777, the soldiers under Captain Moultrie were obliged hurriedly to construct a fort to protect themselves from an attack by the British fleet. For this purpose they used the trees that were growing on the shore and the balls of the enemy either passed over or lodged in the spongy wood. Thus the small garrison within were enabled to repulse the foe. To commemorate this event the state seal shows an oak without branches, at the foot of an upright palmetto, signifying the victory of the palm over the oaken British fleet.

Serving a valuable purpose in war it has served many in peace.

This is the tree which is commonly called cabbage palmetto because the growing tips are cut off and eaten as a vegetable by the negroes. They consider them a great delicacy. A far greater destruction in their ranks is caused by using the buds for scrubbing brushes. From three to four feet of the top are taken off, and after removing from the centre the tender young leaves, the remainder is boiled, shredded by machinery, and made into brushes. A factory in Jacksonville has converted as many as 7500 of these buds into scrubbing brushes in a single week. The

[1] History of So. Carolina, Macready. Vol. I. 215.

leaves serve as a thatch covering for roofs, and also find their way into market under the guise of hats, mats, fans, and baskets. The large demands made upon this tree for the service of Palm Sunday is still another cause of its diminution. One firm in Boston supplies all the churches in New England, so they tell me, receiving each year 200,000 leaves.

We had often heard of and had seen pictures of the long-leafed pine, but our first real acquaintance with it was when we stepped from a sleeper one morning and found ourselves surrounded by them, at Pinehurst. This well-known health resort in North Carolina, as its name indicates, is built among pines. These pine trees are of three species, one with short leaves, growing in clusters of two, called the short-leafed pine (*Pinus echinata*), is of wide distribution, found from southern New York to Texas. The other two species, the loblolly and long-leafed, have their leaves in clusters of three. The loblolly or oldfield (*Pinus taeda*) has leaves from six to ten inches long, and is generally seen with innumerable cones, its larger, longer-leafed neighbor, commercially the most valuable of the three, is known as the long-leafed pine (*Pinus palustris*). These last rise tall and straight with no low limbs and the crowded clusters of long dark green leaves form dense tufts at the ends of the branches. There are not many fine specimens in Pinehurst and some of the young trees growing well apart from each other are too slender to stand erect.

The soil of the region is sandy and the level country stretches in every direction for many miles, one road being so like another that with no sign boards, it is easier to lose one's way in these woods than to keep on the right path. The roads are very poor, not much more than cart tracks, and generally without bridges across the streams, so that a horse and carriage has always to ford and pedestrians cross on logs.

These piny woods or pine barrens are from fifty to one hundred and twenty miles wide and extend for a long distance nearly parallel with the coast. The higher portion is covered almost exclusively with the long-leafed pine, but it has been cut from the lowland close to the coast, and is now being replaced by less valuable growth. Originally it skirted the entire coast, with the exception of the southern portion of Florida, from the extreme southeastern

part of Virginia to Louisiana and Texas. Working plans have recently been prepared by the Bureau of Forestry for over a million acres (1,250,000) in Texas. It is also found with a mixed growth of other pines and hard woods on the lower slopes of the Appalachian Mountains at an altitude of two thousand feet. This is, covering as it does thousands and thousands of square miles, a wider distribution than is claimed for any other tree in the southern states.

A fourth species of pine growing from South Carolina southward is the Cuban. This so closely resembles the long-leafed from which formerly it was not distinguished, that it is often cut and sold under that name.

The same confusion exists in the South as here with regard to the use of popular names, and the long-leafed pine has a dozen or more designations; chief of these are southern yellow, North Carolina pitch, Georgia, Georgia long-leafed, Florida yellow, Texas yellow, and long-leafed.

The largest forests used to be in the state of Georgia which has given one of the popular and best known names to the tree, Georgia pine. These once magnificent forests have been practically exhausted by tapping the trees for turpentine, and cutting for the lumber market. That their extermination is but a question of a short time is easy to believe after reading the government report[1] which states that in 1890 one hundred and seventy-five mills in five states[2] (eighty-eight in Georgia alone), were sawing exclusively long-leafed pine timber.

The seedlings of the long-leafed pine look like tufts of grass and, scattered among its coarse growth, one could hardly suspect they were anything else. They grow but little in height for several years, giving most of their nourishment to the development of a strong root system, by which they are better prepared to live in soil where the water supply is scanty.

A plant two years old is not more than one and a half inches high, while the taproot is often two or three feet long. The slow upward growth continues until the plant is about seven years old and as many inches high, when its period of most

[1] Timber Pines of the Southern United States, by Charles Mohr, Ph. D.
[2] North Carolina, South Carolina, Georgia, Alabama, Mississippi.

vigorous growth begins, and it doubles its height in a year. Had I suspected their age I would not have been guilty of cutting some to send home to friends.

When the plants are only several feet high they are very beautiful and look like green plumes. Such great quantities are cut in this condition every winter and sent to our northern markets for decoration, that it should seriously be considered as a menace to the extermination of the young trees. The leaves remain green for a long time and put in flower-pots they look like growing plants. In this fashion they have been used extensively for church decoration. They have been also on sale at the florists in Boston this winter. In Washington last winter at the time of Prince Henry's visit the steps of the German Embassy were decorated with them and they made a beautiful effect. The leaves on this young and vigorous growth are from a foot to a foot and a half long, but on old trees they are shorter, often not more than eight inches long. At the tip of the growing shoot is a beautiful silvery-pointed bud, partially concealed by the length of the leaves.

The largest remaining forest of this species to be seen in the State of North Carolina, so we were told, is within fifteen or twenty miles of Pinehurst. It is known as Ray's Forest and covers an area of only 2300 acres, whereas formerly it was estimated that this tree covered about 15000 square miles of territory in the State.

A walk or drive through these woods presents a very different effect from the dense shade of our northern forests, owing to the absence of the lower branches and the freedom from underbrush. The foliage being clustered at the tops of the trees leaves long vistas of straight columns outlined against the sky. Here and there through the woods we came upon a few deciduous trees, such as buttonwood (*Platanus occidentalis*), red maple (*Acer rubrum*), and the black-jack (*Quercus Marilandica*), and the willow oak (*Q. laurifolia*). There are also occasional patches of low, swampy ground where alder (*Magnolia glauca*), horsebriar, and *Leucothoë* grow. This last, a broad-leafed evergreen shrub has, by the by, been planted at the foot of Hemlock Hill in the Arboretum. In winter those who know where it is

to be found enjoy its sprays of shining green leaves arching over the snow-covered ground.

Unfortunately this Ray's Forest is doomed to an early death, for in three years, if the present plan of getting turpentine and subsequently cutting the wood is carried out, not many trees will be left standing. Exception has been made of a few which are to be reserved as specimens and are spoken of as round timber because they have not been cut or tapped for turpentine. It was a strange and peculiar sight to us to see the trees stripped of their bark for several feet from the ground. This is done in connection with one of the most important industries in the state, known as the Naval Stores Industry, probably because its products have been so extensively used for vessels and in ship yards. It consists in gathering a resinous substance from the trees, and converting it into the resin of commerce and spirits of turpentine. Indirectly tar and pitch are included. Tar is produced from dead wood and thoroughly seasoned stumps. These are gathered, put in a clay-lined pit, set on fire and loosely covered with earth. After nine days of slow burning tar begins to flow into a hole some three feet away with which the crude oven is connected by an underground channel. The flow continues for several weeks. Pitch is obtained as a result of boiling down the tar. We passed the blackened pits where this process goes on.

The resinous substance is not the sap but comes from ducts in the inner wood of pine trees and flows more freely from the long-leafed pine than any other tree in the United States.

Unfortunately we were too early at Ray's Forest to see the flow of turpentine, but the overseer was kind enough to explain to us the process, beside calling a workman to cut a tree and collect the dippings, that we might take some photographs.

The turpentine is obtained by removing the bark on the trunk of a tree and cutting into the wood when a liquid exudes in large quantities. The wood is cut in diagonal grooves from both sides toward a central perpendicular line or track down which the liquid flows into a deep cavity, hollowed out in the trunk, near the base of the tree. This is called a box and the whole process is known as boxing the trees. The boxes are made usually eight to twelve inches from the ground and hold about three pints.

As soon as the liquid ceases to flow freely the upper ends of the Y shaped gash are cut or chipped again, about a quarter of an inch at a time being removed or just enough to expose a fresh surface of the wood. The cutting is done with a peculiar tool called a hacker which has a heavy iron ball about four pounds in weight at the end of a short handle, and is designed to make the work of chipping easier, by giving greater force to the strokes. The boxes are cut in the winter and the flow begins about the first of April. It is most abundant through the summer and ceases in October or November. The chipping must be done nearly every week thus increasing the length of the exposed inner surface from one and a half to two inches a month. At first cut about seven inches in length the wounds gradually extend upwards until, upon trees that have been worked for many seasons, the upper end may be fifteen or twenty feet from the ground.

From one to three boxes are made on each tree. If boxed on one side only they can be worked for ten or fifteen years, for after a rest of several years new boxes are cut, but if at first the bark is cut all around the trunk the trees are killed in three years time. Once every few weeks the resin or dippings is gathered from the boxes with steel spades, put in buckets and transferred into barrels to be taken to the distillery or still, where the resin and turpentine are separated.

The overseer went to the still with us and explained the process. When the turpentine is heated to the boiling point it flows from the vat with a stream of water through a coiled pipe, called the worm, which is surrounded by cold water. The liquid as spirits of turpentine falls thence into a receptacle, the water at the bottom; this is allowed to run off and the spirits transferred to barrels. The thicker portion as resin flows in another direction into a trough from which it is also dipped into barrels. The first year's yield is white and is known as "Virgin Dip" but each succeeding year the liquid grows yellower and darker.

The trade in turpentine and the manufacture of tar and pitch were started in North Carolina by the first settlers and in Colonial times these products furnished the chief exports of the colony. In 1770 their value amounted to $215,000. In 1890 it had

increased to more than eight million dollars ($8,135,339). This country has for many years supplied a large part of the world's demand for these substances, but the industry is doomed to destruction unless a different method is substituted.

In France the work is done more intelligently. Instead of cutting the whole side of a tree they cut a narrow groove and fasten at the base of it a small earthenware pot in which the resin collects. In time this heals over and another groove is made in a different place, while the tree is uninjured. A similar plan of using an earthen pot or cup has been patented by a man living in Louisiana, and it is to be hoped that the method will come into general use in this country. It will both save the trees, and economize the resin, for it is designed to move the pot upward as the scar is lengthened, thus reducing the distance over which the resin flows. The permanent boxes in the trees are gathering places for chips and dirt, a difficulty which the new method avoids.

Since writing the above I have learned that the Bureau of Forestry has been conducting experiments under the direction of Dr. Charles H. Herty which have proved the great superiority of the new over the old system. The trees have yielded twenty-three per cent more turpentine, an increase in one year sufficient to pay for the new equipment and to furnish a profit besides. It is expected that in a short time the new system will be in general use.

A lumber company has established itself in Ray's Forest with the intention of cutting down the trees as soon as the turpentine company has finished with them, having paid for the privilege at the rate of ten dollars an acre. Such land without the trees is of little value, often being sold for fifty cents an acre.

Many lumber dealers believe that the strength of the timber is affected by the drawing off of the resin, bleeding as it is called, but experiments by the Department of Agriculture have proved that bled timber is as strong as unbled if of the same weight. The value of the outside planks is a little less because it is from the sap wood that the resin is drawn off. It cannot be removed from the heart wood.

In all forests of long-leafed pine where turpentine is gathered it

is customary in the spring to clear away from cut trees chips of the bark and other refuse matter in order to lesson the chances of fire. At first it is raked in a circle around the trees and the debris is afterwards gathered into heaps and burned. The fire often spreads to old stumps likely to be covered with resin, perhaps to the young trees, as well as the older ones that have been abandoned in the turpentine orchards. Many of them charred and blackened remain standing until blown over by the wind.

The wood is so resinous that kindlings in building a fire are unnecessary, as we had occasion to know. Apply a match to a log and it will immediately take fire and burn. This quality that is so convenient indoors proves most disastrous in the forests.

Fires due to various causes always have been and still are of frequent occurrence in these pine forests, even owners of the land set fires every year to improve the pasturage for their stock. Burning is supposed to stimulate the growth of weeds and grasses, but of course continual fires gradually consume the fertility of the soil and destroy the seedlings. We saw one or more of these fires every night to which no one seemed to be paying any attention. The people appear to be indifferent to what is considered by them as almost unavoidable. Long stretches of woodland in various places do not appear to have any seedlings, then in other more protected spots there are great growths of them. Other causes of destruction to these pine forests are in the pasturage of cattle who eat off the tops of the young trees; hogs are always allowed to roam at large through the South and do much injury by digging up and eating the tender roots of the young plants; and squirrels pull the cones to pieces to get at the sweet seeds.

It seems marvelous that under these adverse conditions any seedlings escape destruction and more especially when the fields of burned stumps bear such evidence of continued fires.

Another conifer of great interest, not an evergreen, grows along the low coast lands of the Southern States, sometimes following up the rivers for several miles. Unlike the long-leafed pine this conifer, the deciduous or bald cypress (*Taxodium distichum*), needs a great deal of moisture and grows in wet swampy soil that is often flooded for weeks at a time; so that

the young plants are wholly covered with water. It must be a desirable condition, for the old trees grow to a large size. Fortunate it is that some trees prefer the swamps and some the dry sandy plains that both may be clothed with verdure.

Pinus palustris, the long-leafed pine, so it seems to me, is unfortunately named, as we did not see nor hear of its growing in swampy ground although palustris means a swamp.

We went through the Dismal Swamp Canal and to Drummond Lake for the purpose of seeing the bald cypress trees. We were told they could be seen to good advantage in this region, and, furthermore, we knew that some years ago the Geographical Society of Washington had thought it worth while to make this trip.

A canal boat leaves Elizabeth City in North Carolina every other day and starting from that point we found the first ten or fifteen miles of the route was on the Pasquotank River, which grew narrower as we ascended until we were close to the banks on either side. The cypress trees were numerous and conspicuous, just coming into leaf. Some trees were reddish-brown and some yellowish-green in color. In contrast with this delicate green were the brilliant colored keys of the red maples, everywhere abundant through the woods.

We entered the canal which stretched out before us in a nearly straight line for twenty-two miles, connecting with Deep Creek at a point seven miles from Norfolk. In order to deepen the canal recent dredging had drawn away the water in adjacent lands from the roots of the trees and their bare branches testified that hundreds of them had been killed in consequence. The mud had been deposited upon the banks making them very unsightly. In some places however they were covered with plants conspicuous among which was the *Gelsemium*, commonly called jessamine, with its bright yellow flowers trailing over the ground.

From time to time we passed small settlements and there are occasionally large farms, from which vegetables are shipped to our northern markets.

About midway of the canal a small side canal, its banks covered with a growth of horsebrier and wild roses, leads to

Drummond Lake which is off the direct route and has no regular communication with it. So after all we had to make a separate excursion to Drummond Lake, the objective point of our canal trip, taking a launch from Norfolk there and back on another day. Altogether the visit was a disappointment, first, because the wind was blowing like a hurricane when we were there and it was not considered safe to go out upon the lake, which covers an area of about twenty square miles; and second, because there was no chance to see the peculiar cypress characteristics. As far as we could see around the shore most of the trees appeared to be dead due to the lowering of the water.

We saw some of these trees to much better advantage on the James River and also while driving near Suffolk, coming unexpectedly upon them as they stood in the water on the borders of a small stream. The two forms of growth which this tree assumes were quite noticeable, the erect pyramidal or fastigiate form, common to young trees, and the broad summit, often one hundred feet across, and rounded outline of older trees, which generally loose their lower branches, the upper ones curving slightly downward. Where a tree stands alone or a few grow together in cultivation they show the pyramidal form as the one grown in Brookline, or as groups of them do in Central Park, New York.

They have also two forms of leaves, the one pressed close to the branch the other standing at right angles from it. They may appear on the same or on different branches of the same tree, or on separate trees. Trees with both forms of leaves are growing side by side at the Arnold Arboretum. The foliage is very delicate and fern-like and its beauty makes the tree desirable for cultivation.

One of the peculiarities of the bald cypress is the enlarged trunk near the base where it slopes outward, looking like an inverted vase; but the most striking characteristic is a series of projections from the roots, known as cypress knees, an arrangement, so it is thought, for supplying them with air; and as water often covers the ground around the trees to the depth of several feet, the roots, of course, must have air. This is conveyed through the hollow projections which grow on the roots and rise at least

high enough to be above the usual high-water mark. One traveler in Florida relates that he rode among them where they were not less than seven feet high.[1] If, perchance, the water rises so high as to cover these for many weeks at a time, the trees die. When the water recedes and the knees can be seen at a distance, they give the effect of low stumps, often as many as seventy-five or one hundred springing from the roots of a single tree.

This is the generally accepted theory of the purpose of the knees, still they have puzzled and have given a good deal of cause for speculation to botanists.

Michaux writing in 1819 said "no cause can be assigned for their existence," and even as late as 1882, as eminent an authority as Dr. Gray, said that "the use to the tree of the knees is unknown." Some authorities believe that their purpose is to strengthen the root system. From the under side of the horizontal roots large anchor roots are sent off at right angles into the ground, which help to hold the tree firmly in the swampy soil. The knees chiefly occur opposite the anchor roots and no trace of a leaf, bud or sprout has ever been found upon them, except where some seed may have lodged in a decayed portion of the surface and then taken root.

Mr. Lamborn in an article contributed to Garden and Forest in January, 1890, describes some trees that "stood in sand so loose that when the level of the water was lowered the waves readily washed it away and carried it into the depths of the lake." He says, "some four feet of the root system was thus finely exposed. After several days spent in examining a score or more of large trees that had been thus denuded I became convinced that the most important function of the cypress knee is to stiffen and strengthen the root, in order that a great tree may anchor itself safely in a yielding material." When the tree grows in firm ground or where the roots can obtain a hold in the ordinary way knees seldom if ever develop.

The wood of the cypress is very valuable for lumber, being used for a great variety of purposes, and varying in color with

[1] Lamborn, Garden and Forest. III. 21.

different localities. In the last twenty years it has largely taken the place of white pine (*Pinus strobus*) which has become more and more scarce in the market.

The vicinity of the Gulf of Mexico is the region where the largest trees are found, for the cypress ranks second in size of the deciduous trees in the United States and the wood is said to be of the best quality. In such places as this the trees are usually girdled six months or more before cutting in order to stop the flow of sap. This causes the log to be somewhat lighter in weight, otherwise it might sink as it rolls over into the ditch which is dug out for the purpose of getting the logs to the river, where they are rafted together and floated down to the mills. The cutting often has to be done by men in boats.

No other tree grows surrounded by so much water and for centuries they have stood in marshes apparently undisturbed by storm or flood. In wet places especially this tree grows as does the long-leafed pine in areas of pure forests, but as we saw it along the Pasquotank River in drier ground it was growing with red maple and liquidambar. On the Ashley River near Charleston *Tillandsia*, or southern moss, grows upon its branches. This plant loves moisture and in the damp woods of the South often veils these trees, as well as other kinds, with its abundant growth.

Of this remarkable tree Professor Sargent says "it is the glory of the maritime forests of the South and one of the most valuable and interesting trees of the continent; the bald cypress with its tall massive trunk rising high above waters, darkened by the shadows of its great crown, draped in streamers of the gray tillandsia, is an object at once magnificent and mournful."

As we left the lowlands for the mountainous district we found coniferous trees fewer and the deciduous trees more and more apparent. Red birches (*Betula nigra*) grow along the banks of the Swananoa River at Biltmore where they attain great size. The red fluffy character of the bark as seen on young trees at the Arboretum has there entirely disappeared, unless it be from the upper branches, and the trunks look old, subdued, and gray. These trees are estimated to be one hundred and fifty years old or more. Leaning over the water, as is their habit, they give a very picturesque effect to the river. Beneath their shade along

the banks grows a tall reed or cane resembling bamboo. When we saw it the dried leaves of last season were still clinging to the branches.

On the estate known as the Biltmore Forest the trees are small, owing to the fact that before Mr. Vanderbilt bought the land it was owned in small lots by more than three hundred poor farmers who were in the habit of cutting all trees that could be used, and in the ignorant and careless felling injured the young trees. Cattle and fire helped on in the general destruction. So that when the forest was put under scientific management in 1902 it was found to be in a very poor condition. In the ten years that have elapsed since then great progress has been made toward restoring the woods to a production of desirable species.

A short distance from Biltmore we saw the Carolina hemlock (*Tsuga Caroliniana*) and the dark slopes of the high mountains we learned were covered with Fraser's fir (*Abies Fraseri*). Both this hemlock and fir are found only in this vicinity. Indeed we learned from botanists at Biltmore the location of many rare trees and shrubs, growing only locally. These same botanists think the mountains of North and South Carolina the most interesting botanical region on the Atlantic Coast, partly because of the local plants, and partly because of the great variety of species native to the region.

The general appearance of the forests so far as the traveler can see shows many traces of fire and flood. The largest number of fires have been set by farmers, who burn over the ground in autumn in the belief that better pasturage for their cattle is obtained the following spring. Fires thus started often spread beyond control and burn over large woodland areas. Added to this, injudicious cutting has exposed many hill slopes to the weather. Consequently, last year when heavy rains followed an unusual fall of snow, they caused the most disastrous flood ever known in that region. We saw many traces of its destruction, especially on the French Broad River in the western part of North Carolina. In the State of Virginia these conditions are even more noticeable, where many of the hillsides are strewn with burned or partially decayed timber.

It was in the mountains of South Carolina that we saw the

largest and finest trees. Leaving the railroad at Seneca we drove twenty-five miles up a river valley, whither we went for the purpose of seeing that most interesting of all American flowers, *Shortia galacifolia*, little coltsfoot, the natives of Jocasse Valley call it. At first our route lay over a dreary stretch of country where dead pine trees stood in various stages of decay. They had been girdled for the purpose of killing them. This the settlers do to clear the land for planting corn and cotton, in many cases not even removing the stumps. We passed through many such fields until we came to a growth of hard wood, oak predominating, with mistletoe growing upon its branches.

Our guide learning of our interest in trees offered to show us some exceptional ones, as he thought, if we would give another day for such an excursion. It proved to be a day's tramp there and back from the valley, but we felt well repaid for all our trouble in crossing streams and climbing through rhododendron thickets, until we finally came to the big timber. We saw chestnut trees (*Castanea dentata*) fourteen feet in circumference, tulip or yellow poplar (*Liriodendron tulipifera*) more than sixteen and a half feet in circumference, five feet from the ground, a liquidambar or sweet gum (*Liquidambar styraciflua*) nine feet, sending its straight trunk into the air for one hundred and twenty-five to one hundred and thirty feet, with at least seventy-five feet clear of branches. A great variety of trees contributed to the majesty of these hillsides. There were black walnut, black birch, ash, persimmon, hemlock, and pines. There are said to be over one hundred different kinds in these mountains, and it seems probable that the long distance from a market is the reason why so much virgin timber remains untouched.[1]

Best of all, the ground beneath our feet was carpeted with the shining evergreen leaves of *Shortia*. A sight of this beautiful

[1] It was a pleasure seldom experienced to be among trees that were not contributing their foliage for decoration like the palmetto, nor yielding material for commercial purposes like the pine and cypress. It was simply a region of beautiful trees in a quiet and peaceful valley far from the buzz of machinery and the bustle of the world. It was a satisfaction indeed to see trees that were not in any way contributing to the demands of commerce, and I might add one word more and say that it was just this fact that gave them a special interest.

flower in bloom in its native habitat, was the crowning point of our trip, and gave an added zest to the interesting story of its rediscovery in this country, after having been lost to scientists from the time of Michaux' visit to America in 1785, to the latter part of last century, a period of nearly a hundred years. With this picture I will conclude, hoping that I have been able to convey to you some of the interest and enthusiasm I felt myself in these trees, and perhaps to excite a longing to see for yourselves some of the wonders of our southern forests.

[The lecture of Miss Cummings was illustrated by numerous lantern slides, showing pictures of many of the trees and plants mentioned, as well as views of interesting southern scenery. One of the views is herewith reproduced.]

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 21, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. President HADWEN presided and the following lecture was delivered:

THE APPLE AS A MONEY CROP FOR NEW ENGLAND; ITS CULTURE AND PREPARATION FOR MARKET.

BY F. C. RICHARDS, WILLIAMSBURG, MASS.

In order to consider our subject intelligently we need to approach it from three sides.

First, soil and climatic conditions; are they favorable for apple production?

Second, from the commercial side; will it pay?

Third, individual preparation, or am I, as an individual, in any way qualified to engage in orcharding?

As to the first proposition we would say that New England has not yet awakened to the possibilities that lie before her in the way of apple culture. The markets of our own and of foreign

countries are open to us, and well-selected stock of New England packing commands a premium in our large markets above Missouri, Michigan, or New York State packing, or that of any other part of our country. Illinois formerly aspired to be our banner apple state, but her product was deficient in keeping quality and in flavor, and for the past few seasons we have shipped thousands of barrels of apples to Chicago and other western points, and Chicago and other western commission houses are sending their circulars and market quotations all through our New England states.

The same conditions hold good with the Michigan and York State packing, however large and fair the fruit may be and however well-selected, it is taking second rank in the markets because of its poor-keeping quality, and the hard, well-keeping fruit of New England is taking front rank with both dealer and consumer.

I care not to what extent apple orcharding is increased in any part of our country, we in New England can successfully compete with them all, if we but pursue correct methods and if the above statements can be substantiated, as I know they can be, by inquiry of the reliable wholesale dealers in any of our large markets, is it not well for us to take into serious consideration if it would not be profitable and wise for us to engage more extensively in apple culture? We, as individuals, as a community, and as a section of our state, might double and treble our present output, receiving two or three times the amount of money we are now receiving for our product, and with a more extended territory devoted to orcharding, western Massachusetts would soon be recognized in the markets as the great apple-producing belt of the Old Bay State.

Capitalists are quick to see the requirements of the market, and the peculiar adaptation of our soil and climate to the growth of the apple, if those occupying the lands do not, and so it has been proposed to form a corporation of capitalists and practical orchardists, to engage in extensive orcharding on the cheap lands of northern New England. This is just what we do not want, if our farmers will engage in orcharding for themselves. The fruit corporations of California may be, in a way, necessary where they

are at a long distance from markets, but with the necessity there is also a disadvantage to the individual growers, who are largely within the power of the corporations and who can, in a majority of cases, only dispose of their crops through them, and it would eventually work the same way here. If fruit corporations establish themselves in our apple-growing sections, and if they are successful, the outlook of the future for the individual grower is not very encouraging. We are not acquainted with the details of this plan, and it may be better than we think, but however great the advantages may be on one side (and there are, of course, certain advantages in such a corporation), there are also equal disadvantages on the other side, or rather, the advantage enjoyed by the corporation will, by its very nature, work to the disadvantage of the individual grower, and, in the end, be detrimental to his best interest.

We would strongly recommend coöperative packing houses, centrally located in an apple-growing district, where the fruit can be properly and uniformly packed, and put in the best shape for market, and market requirements of the not distant future will probably make some such method necessary. We hope it will, but we strongly disapprove of an orchard corporation controlling a large extent of land in a section, making themselves the trade centre of that section, and practically controlling the crop of an entire district. If the plan can be made to work successfully, there is danger in it for the individual grower, and we do not want it, but what we do want is for the individual farmer, who is alive to his best interests, to plant one hundred, five hundred, or one, two or three thousand trees or more, as his inclination or circumstances will allow, and in a few years our present barren hillsides would be a scene of beauty and fragrance in the spring-time, and a blaze of color and source of profit in the autumn. We want something whereby we can see that our work and care is bringing us a gain instead of merely holding our own, something that will build up our homes, and make us prosperous as individuals, as a community, and as a section, and I firmly believe that the intelligent culture and handling of the apple would do this for us. It would be a great factor in solving the problem of the future prosperity of our rock-bound New England hillsides.

It is a duty that we owe to ourselves, and those who succeed us, to develop to its utmost the industry that seems most natural to our soil, and we believe that the next decade will witness a very perceptible increase in our area of orcharding.

But the question with many who are favorably disposed toward orcharding is, How to start and care for one? There is nothing new to be said about this; so much has been said and written from time to time, through books, the agricultural press, and through speakers, that the entire ground has been practically covered. Each step necessary in the planting and care of an orchard could easily require an extended address of itself in order to do it full justice, but there are a few principal points upon which we will just touch and give them a hasty review.

The first question that often presents itself to the would-be orchardist's mind is, Have I a favorable location for an orchard? As already indicated, that need not concern us over much. Here on the hills of New England Dame Nature has already settled that question, and the favorable location is all around us. I know there are theories that certain exposures are the best, and that land should slope toward the east, or the south, but what we are after are apples, regardless of the exposure of the land, and if your soil is such as will produce you fair crops, apples will grow there and you may feel safe in planting an orchard.

In a day's ride you can see orchards exposed to all four points of the compass; wild trees come up by the roadside and in out-of-the-way places, and seem to be indigenous to the soil, so far as any particular lay of the land is concerned.

I would only say in exception to this, that if we wish to get good fruit, the best fruit, to flee to the hills; get up out of the lowlands by the streams, and on to the everlasting hills, where God's glorious sunlight will give the vivid color, and as the mellow autumn days approach, will add the richness of flavor, and where the breezes will play freely among the tree-tops. Oh, give us, by all means, the steep and rugged hillsides for the apple in its perfection.

In preparing the soil for planting it is best, if it can be done, to plow a strip ten feet wide or more, where the rows are to be, pulverizing it thoroughly and making it as mellow as possible.

But if the trees are to be planted when it is not possible to plow, then dig the holes four feet square, and to the depth of two feet, taking out all stones, and working, so that when completed, the soil will stand cone-shaped in the center of the hole.

If the trees are to be planted in the spring, it is better to do this work the previous fall, so that the alternate freezing and thawing during the winter will pulverize the soil more completely. It is of the utmost importance that the soil should be made as mellow as possible, that the roots of the young tree may meet with favorable conditions. Too many neglect these precautions when transplanting and their efforts result in failure. It is not at all surprising that so many trees die after transplanting, when we take into consideration the careless and neglectful manner in which the work is performed. The suitable preparation of the soil is one of the first essentials in starting a young orchard, and should be attended to with great care. Any neglect here will manifest itself very quickly in the growth of the orchard.

Selection of trees:— This is a matter of prime importance and requires care and considerable experience. It is better, if one can do so, to go to a nursery and select for oneself, or, if not enough are required by one person to pay the expense of such a trip, let a neighborhood, or enough persons who are interested join together and send one of their number to make selections. And in making selections do not always choose trees that show the largest size but have more regard to their general thrifty appearance. Those that stand upright and have a stocky, thrifty appearing body and branches are best. One can easily detect such trees in the nursery rows after suitable practice. As indicated above, it is not always the largest trees that are the best. Many times the tree that stands four to five feet high in the nursery row will, after transplanting, overtake and surpass the one that stands from five to seven feet; nor is the cause of this hard to explain. The smaller tree can be taken up with greater care and consequently have more perfect roots than the larger one, and, other conditions being equal, they will become sooner established in a new location, and are much more likely to live. Another important point is, to avoid those trees that have only two or three main branches leaving the body; they are quite liable to split down

when they come into bearing, and the tree be ruined. This is especially true of the Baldwin. Have at least four limbs, and five or six are better, branching from the stem as nearly opposite one another as possible. These branches, as they attain their growth will form a solid knot, that any strain coming on the limbs when heavily loaded, will not be able to split down. There is also a danger, where trees have only two or three main limbs, that water will enter some slight crack during the winter, and, by freezing, will, in a few seasons, split it apart and destroy the tree.

The next consideration, after a suitable selection of trees has been made, is the proper mode of setting them. How many orchards have been practically ruined by setting the trees too near together, and by lack of care in the disposition of roots in the holes and a general lack of care and intelligence as to details during the entire process. Forty feet apart each way is near enough for standard trees. This seems a long distance when the trees are first set, but as they reach maturity, it is none too much to allow free access of air and sunlight to all parts of the tree, which is quite essential in securing the best fruit for market.

When setting the tree, trim off all bruised and mutilated portions of the roots, and also cut back the previous year's growth to correspond with the cutting back of the roots, or, if severe root pruning has been necessary, the shoots may be cut back to one or two strong buds just above the previous year's wood. This is made necessary for the reason that the leaves of a tree are continually drawing from the roots, and throwing off a large amount of moisture, and if we diminish the supply from the roots by pruning, we must also make a corresponding decrease of the leaves to be supplied by them. Be careful to plant the tree no deeper than it was when standing in the nursery row, and be sure to see that the roots lie in a natural position, drawing out the small fibrous roots so they will lay straight. After this is accomplished, begin to fill in finely pulverized soil around the roots, being careful to keep out all stones. After a few inches of soil have been sifted in, pour on some water from a watering-pot, held at a sufficient height, so that the stream will pack the earth solidly around the roots, using a short stick to puncture the soil, so the water can penetrate. If this process is repeated until the

holes are filled up to the "collar" of the tree, they will live, as a rule. In addition to this care should be taken that manure does not come in contact with the roots. It is best to use old, well-pulverized compost well incorporated with the soil.

Selection of Varieties: — This is by no means a matter of secondary importance, but is to be taken into careful consideration in planting an orchard to supply fruit for the market. One of the great difficulties we have in New England orcharding is that we have too many varieties. If a grower has a carload of apples, and a buyer comes to purchase and finds that the crop is made up of four or five different varieties, he cannot afford to pay as good a price for them as he could if the packing was one straight variety, or, at most, had only two or three, because for the different varieties, he must look for nearly as many different classes of trade to which to dispose of them. And so we would advise, after providing the kinds wanted for home use, that only one or two varieties be planted for market. It makes less work in harvesting, less work in grading and packing, is more satisfactory to the buyer, and better prices can be realized. In selecting varieties, it is wisdom and good common sense to study the requirements of the market, and the adaptation of our soil and climate to any particular variety. Do not plant any varieties merely because they are quoted high in the market, for they may not do well in our section. For instance, the Newtown, or Albermarle Pippin is a high-priced apple, and has been quoted as high as $7 and $8 per barrel in the London market, but it is not the apple for us to plant, as the conditions of our soil and climate are not favorable for its full development, while along the Hudson river it grows to great perfection; and there are other kinds that do well in market, but they will not do well on our soil.

What shall we choose, then, for our orchards? I should say that the Baldwin stands preëminently first and foremost as the apple for us to plant. Varieties come and varieties go, but the Baldwin remains steadfast among them all. Any fame that New England fruit has acquired in the markets, has been gained by the Baldwin, and any success we may hope for in the future from our orchards, will probably be gained and maintained by the

carefully picked, well graded, and well packed Baldwin apple. We must build and maintain our reputation on that variety. There may be many of better flavor, and many larger and more showy, but they are not for us to raise. I would include the Greening also, only it does not seem of late years to be in good bearing condition with us. It will bud and blossom profusely in the spring and scarcely a barrel of apples on an entire tree when harvesting comes.

If fall fruit is desired, there is the Congress, Twenty Ounce, Nonesuch, etc., to select from. The Nonesuch is a profitable apple to raise, as it bears so profusely, and is in good demand, though there may be the objection to raising it on a large scale, that being sub-acid, it is suitable only for table use, or baking purposes, and requires a high grade for the best market, while the culls cannot be utilized for evaporating and other purposes, as can the acid varieties.

We will pass hastily over the processes of pruning and fertilizing, as we require the time for other considerations, only saying of the former, to keep the trees as low as is consistent with the ease and convenience of getting around among them. The work of harvesting can be performed with far less expense from a low tree than a high one, as nearly one-third of the fruit can be picked from the ground, or by use of a step-ladder, and the injury to fruit that falls from the tree is not so great. Of the latter we would say, "Feed the tree and the tree will feed you," but do not fertilize too heavily, as a tree cannot assimilate more than the amount that is required to sustain vigor and perfect its fruit. Make a study of the amount and kind of fertilizing material required by the orchard. As a rule, we prefer in actual practice, stable manure as the basis of fertilization, but as the elements entering into the composition of the apple are composed quite largely of potash, we would advise that the stable manure be supplemented by liberal applications of ashes, or other fertilizing material containing a large per cent of potash.

Spraying: — When the necessity for spraying first became apparent, it seemed as though the amount of labor involved, and the necessary expense incurred, would bring orcharding as an industry to an abrupt termination. But as our experiment stations

demonstrated that certain fungicides and insecticides would check the depredations of leaf blight and apple scab on the foliage and fruit, the conveniences for applying the remedies were brought to greater perfection; the orchardists renewed their courage and accepted the situation. It stands as a foregone conclusion today, that the orchardist who hopes to maintain the orchard in a thrifty, growing condition, and to make it a source of profit, must spray the trees, though it is hoped for the future, that a change of climatic conditions and a judicious system of fertilizing, ascertaining the right amount and kind of fertilizer to be used to maintain a tree at its best, will do much in process of time toward eradicating the present diseases to which the apple is subject. A well-fed and otherwise well-cared-for tree will more easily maintain itself against the prevalent diseases, than one that is neglected. It was observed in an orchard of Baldwins during the past season that had been well sprayed and afterward a liberal application of fertilizer made on one portion, that the portion fertilized showed a marked difference from the part that was not. While the spraying, of itself, was of great benefit to the entire orchard, yet the combination of spraying and judicious fertilizing on the part thus treated, was of still greater benefit, and the difference in the appearance of the two parts of the orchard was so decided, that it could be easily detected by even the unpracticed eye of the casual observer. The foliage was of more thrifty and luxuriant growth and retained its hold upon the trees, and its fresh green color, until the harvest was entirely completed in October, while the foliage on the other portion dropped prematurely. The fruit also on the fertilized portion showed larger size and a greater brilliancy of color. The orchard where this was observed has always had the best of care, and in view of these facts, there may be sufficient ground for us to experiment on the proper combination of spraying and fertilizing in order to secure best results.

The cost of spraying for an orchard in full bearing, including labor and cost of material, will not vary much from twenty to twenty-two cents per tree for three applications, which is ordinarily the number of applications necessary during the season. This estimate is based upon obtaining sulphate of copper for six cents per pound, lime for one cent, and Paris green for twenty cents.

As before intimated, the large growers are, as a rule, devoting time and attention to spraying, but it has been more difficult to arouse the small growers to a realization of the fact that the practice is highly beneficial and even necessary. But they are slowly awakening to the situation, and are realizing that present conditions require that their trees be sprayed.

It is a matter of regret that so much ignorance prevails among our farmers regarding the causes that make spraying necessary. The only thing that the majority of them know about it is that a few applications of Paris green will prevent injury to the fruit by insects. But this is not the only reason why we spray, nor is it altogether the most important.

One of the most important of the causes is the fungous disease known as apple scab and blight, which affects the foliage of the tree as well as the fruit, causing the black spots we so often see on our fruit, and covering sometimes nearly half the apple, making it in extreme cases entirely unfit for market in, even, No. 2 grade. Its effect on the foliage is that the roundish black or russet spots gradually extend in size until they sometimes cover the entire leaf, when it can be easily crumbled between the fingers. The foliage will begin dropping from the trees in July and through August, until in some cases the trees are entirely bare of all foliage by the middle or last of September. This disease and the consequent loss of foliage is a serious drawback to the health and vigor of our orchards, and will result disastrously unless the proper remedy is applied. I have conversed with many growers who were not acquainted with the nature of the disease, but whose trees were yearly showing the effects of its action upon them. The preventive to be used is what is known as the dilute Bordeaux mixture, composed of four pounds of sulphate of copper dissolved in a sufficient quantity of hot water to hold it in suspension, and four pounds of unslacked lime, well-strained, adding enough water, when thoroughly dissolved and mixed, to make forty-five gallons in all. It has been found by experiment that insecticides can be used with this formula without the injury to foliage that is sometimes caused by scorching, when used by itself, and after the first spraying, we add one-fourth pound of Paris green to the above mixture.

The Vermorel nozzle is generally conceded to be the best of any with which to apply this mixture, as it makes a very fine misty spray that is quite penetrating, reaching all parts of foliage and fruit, and will not clog up by the particles of lime that are in the mixture.

Harvesting, Grading, and Packing for Market: — These are the last processes to be considered, but are by no means of least importance. All the other processes depend upon these to attain best results and highest success. These processes should have, and must have in the future more of our care and attention, if we hope to retain the favorable disposition of the market now being manifested toward us.

Where the fruit is produced is the best place possible to put it in proper shape for the market, and we need to study the best ways of packing and grading, and reap the rewards and profits by doing this work in the best possible manner ourselves, instead of letting our crops go into the hands of one who stands between us and the wholesale dealer in the market, or else depend upon the dealer in the market to send an experienced packer to see that our fruit is properly graded and packed. This has been a popular way with many, but it is all a mistake. There is no gain in it, but much loss. It has often been said to me by those who had sold their crop, that the buyer would send a man to see to the packing, considering that their responsibility in the transaction, aside from making delivery, was at an end. It is very true that the buyer assumes the responsibility for proper grading and packing, but we pay for it.

The buyer gains well selected goods to place upon the market, and we lose the profit that might be gained by properly grading and packing the apples ourselves. The usual prices paid by dealers to experienced packers is from twelve and one-half to fifteen cents per barrel and with this there are incidental expenses incurred by the dealer in sending out packers, that easily bring the cost up to from twenty to twenty-five cents, depending upon the size of the lots to be packed and their distance apart. All this expense comes directly out of the producer, who thinks he has so happily escaped the responsibility of seeing that his product is in proper shape to place upon the market, for the buyer

will every time pay us enough less for our crop to cover this expense.

The buyers do not want to do this work for us. They would much prefer to pay us a higher price for our product, if they could be assured the work would be done properly, than to do it themselves, but the necessity for some sort of protection has been forced upon them by the carelessness, ignorance, and neglect, that is constantly being shown in our packing.

Our New England packing has been a term of reproach, and a byword in the markets, and will continue to be until we learn to put up an honest barrel of apples; to pack a barrel that will be No. 1, or No. 2, according to grade from top to bottom. It is enough to shake one's faith in the integrity of human nature, to go into the markets and see the apples offered for sale that come largely from the New England states. It is an old and somewhat worn saying about packages that show good fruit at the ends; while the middle is filled with bruised and wormy fruit, but it is none the less true, and until we can correct the tendency to work in fruit that is below grade in the No. 1, and of no grade in the No. 2, we must be reconciled to the just suspicion that now attaches to our packing. We might take the lead in the markets for the general excellence of our product, if we would only use proper care in grading and packing, and we must improve greatly in this respect if we hope for continued success, as we are brought into direct competition with the acknowledged excellence of York State and Michigan grading.

A heavy dealer in one of our largest markets told me recently that the demand for well selected New England packages was practically unlimited in that market and 20,000 barrels would not be a too large quantity for his firm to handle at top prices if properly packed, and this is true in all our markets. We can, by careful grading, command the best prices and best markets.

In order to secure best results in preparing the fruit for market, we must exercise care and forethought at the beginning of harvest. When entering the orchard to begin picking, first gather up all the apples that have fallen from the trees, and keep them by themselves. Never, under any circumstances, allow them to be mixed with the picked fruit. In picking it is best to

first secure what can be reached from the ground where the trees are low, as it will prevent many being knocked off when using the ladders. For convenience of work, the ladder should be provided with an arm or extension that will allow it to reach, by placing the arm in the crotch of a small limb, where it would not otherwise. Avoid all shaking from the tree unless absolutely necessary, and instruct the pickers that they must exercise great care in handling the fruit. Impress this upon them first, last, and all the time. When a tree is being picked, have a man on the ground to gather up all the fruit that falls and keep that by itself. Do not mix it with the picked fruit as it is difficult to get better than second grade from dropped fruit. To secure best keeping conditions, care should be taken not to place heated apples in a barrel immediately after gathering. There are many days during the picking season when the sun shines quite hot upon the fruit, and if placed in the barrel in the heated conditions they are in, they will continue to heat, and decay will result. When the fruit is in this heated condition, it should be placed in the shade on the ground, and left until toward nightfall to cool off, when it can be placed in the barrel with safety.

The outward appearance of the barrels we use to pack in is another item to be taken into consideration, as well as their fitness inside for the use they are designed for. Not enough care generally is exercised in the selection and preparation of packages for packing apples. The first appearance of a package has much to do with its market value, and the buyer takes this into consideration. Do not purchase old-appearing and unclean barrels because they can be bought for a small outlay — you will pay full price and more, too, when offered for sale. Secure good, sound barrels and have them as uniform in appearance as possible. Round hoops are to be preferred to flat, as they are distinctively a New England package. In preparing the barrels for the fruit, first see that all nails on the inside are driven down, so there will be no danger from them of injury to the fruit. In cleaning the barrel first brush out the greater part of flour or other substance that was in the barrel, using a sharp-pointed iron to clean out the chime groove at the bottom of the barrel, which will be the top and "face" end of the package when opened in

market. Rinse out the barrel with water to lay the fine flour dust, after which the barrel is in readiness to receive the fruit.

In grading, a fair apple two and one-fourth inches in diameter constitutes a No. 1 of Baldwin, or other medium-sized variety, though too small for No. 1 of King, or other large-growing variety. Anything smaller than two and one-fourth inches, however fair and perfect, should run into second grade. Use great care in keeping inferior and bruised fruit out of first grade. It is a mistaken idea that the good fruit will help to sell the poor and inferior specimens that may be found in the same package. The poor fruit will injure and detract from the value of the good in every instance.

In grading for No. 2's, care should be taken to keep out such as have no market value. If an apple is quite small in size, but fair, it will pass, but if small and wormy, it should pass into no grade and be rejected. In filling the barrel first place a paper, fitted for the purpose, on the bottom to prevent the fruit on the end from coming in contact with the wood, or any particles of flour that may adhere to it.

In "facing," it is best usually to "double face," as the requirements of the market are demanding that, and it is certain that the packages present a much better appearance when opened. Have one to inspect the fruit as it is run into the barrel, that any inferior fruit that may have accidentally gotten into the sorting baskets may be detected.

Be sure that the fruit is well settled in the barrel by a gentle shake with every half-bushel that is filled in. When this is accomplished and the barrel well-headed and coopered, it is ready for market.

In order to insure good packing that will not show "slack" packages, it is best to let the fruit stand two weeks after picking, and go through the sweat, after which, with proper care in filling and heading, the packages can stand an entire winter in suitable storage without showing any slack, but if packed before sweating, they will almost invariably show slackness in a short time.

We have endeavored thus far to outline and bring in hasty review the natural adaptation of our New England hills for apple culture, and the treatment of trees and fruit that is necessary to

make us successful in it, and unless we are disposed to take the course that will make us successful, it is better for us to not engage in it, as the demands of dealer and consumer are for the best, best in quality and flavor, and best in care of handling and workmanship, for which they are ready and willing to pay us best prices. But if we are disposed to use the necessary care and diligence required to make us successful, there is a prosperous future before us in high-grade apple culture.

But in engaging in orcharding we must recognize the fact that conditions of industry have changed within the past twenty or twenty-five years, and we must fit and prepare ourselves to meet the change. We find this change all about us. It is not confined to any particular industry, but enters into all. If we inquire of the manufacturer or mechanic what these changed conditions require of them if they are to be successful in their business, the answer would be that they are obliged to produce a greater quantity and better quality of work in a given time than formerly; that in order to attain the highest success they are obliged to make use of the best improved machinery and working tools, that they may be enabled to fill orders promptly, and to supply the trade with goods of uniform quality and excellence of material.

If we inquire of the merchant what effect the changed conditions have upon his business, he will tell us that, in order to attain the highest success, he must carry a larger stock of goods, and of greater variety than formerly; that he must make a study of the requirements of his customers, and be prepared to supply their needs before they themselves, perhaps, are aware that such need exists. If we pursue our inquiries and carry them into the lines of professional activity, the professional men will tell us that there has been an advance all along the line; that, owing to the increase of general intelligence, and the advancing lines of professional research, they must study harder and work harder, in order to keep abreast of the times and maintain their positions. They will tell us that the average professional man of forty, thirty, or even twenty-five years ago would be out of date today, and he would be. Look at the immense strides of improvement that have been made within the recollection of men of fifty years of age, and even younger, in manufacturing appliances. Consider

also what scientific investigation and application have done for us, giving us the trolley and cable cars for convenient transit, and the telephone for rapid communication. We will also take for convenience of illustration in professional lines, the practice of surgery at the present day. It almost seems, as we read from time to time, accounts of difficult surgical operations that are performed in our great hospitals, that they could take a man apart and put him together again, and he be the gainer by the operation. The average surgeon and other professional men of fifty years ago, as well as mechanics and those engaged in mercantile pursuits, would be out of place now, and we would have but small use for them. Their acquirements would not be sufficient for our needs; they were sufficient to meet the necessities of their age and generation, and without doubt filled their places in life nobly and well. But conditions have changed, and we of the present day will find in all industries, that the one who does not study the requirements of his particular calling, will be left sadly in the rear.

If we search for the causes that have brought about this change of conditions we will find competition to be the primal cause. Competition has been a mighty power in shaping the industrial conditions of the present day; it has exerted and will continue to exert a wide influence in maintaining those conditions. It is not our purpose to enter into a discussion of the relative rights or wrongs of competition, but merely to recognize the fact of its being an element that enters into our industrial condition. But there are others, also. As an outgrowth of this primal cause, we have two others that must be taken into consideration, as elements in present industrial conditions, namely, — extension and intensive application. Competition demands quantity, it also demands quality; on the one hand a larger output, on the other, a higher grade of product.

These, then, are our present-day industrial conditions, and the question for us is, How are we to meet and apply these conditions to successful New England orcharding? By successful, I do not mean merely successful as an individual (although that, of course, is the basis), but successful in its broad and inclusive sense. We mean the apple-growing towns in the apple-growing districts of all New England; we want to be successful in

orcharding as a recognized section of our country, and not merely as a town, a county, or a state.

But how shall we do it? Well, I will tell you, my friends, just what we lack in order to accomplish it. Success would be ours, only one factor, and that a very important one, is wanting. We have already remarked upon our suitable soil, our favorable location and climate, also the profitable markets that may be ours, but all this is useless to us without the man. What we want in order to reach the highest success is the man, and the body of men up and down these hills of New England to work into orcharding as a business, and when we will engage in it as a business, and conduct it as a business, and not as a pastime, or catch-penny, our success as the largest and best apple producing belt of our country is assured. When we do this, we will comply with that minor industrial condition, — "extension." What we want in orcharding today, are men who will put into it the extensive effort necessary to broaden it, and the "intensive application" necessary to develop and raise our product up to a higher standard. Extension without intensive development is ruinous and meets the condition of competition on only one side. Too much of that kind of competition prevails with us already. What we want are men who have a comprehensive view of the situation and its requirements, men who have the purpose of success in view, and who are willing to begin in a small way, if necessary, but whose effort will be to extend the industry and perfect themselves in it. But in order to attain complete success in the shortest time it is important to make use of the knowledge of others to supplement individual effort. Individual, unaided effort is a long and hard road to travel, and the orchardist needs to recognize that the conditions of success require that he equip himself with all the practical information possible, and to this end it is quite essential that a more extended use be made of the observations and investigations of educated, professional agriculturists. I hope the day has gone by, never to return, when the rank and file of our farmers will speak in derision of "book" farming. I fear the majority of our New England farmers followed on that line too long for their own interest, and the appearance of our New England hill-town holdings would

indicate that we needed more "book" farming, and not less. This is especially true of orcharding. All the information that can be gathered from horticultural works is required, and all the observation and investigation of skilled specialists added to our own experience will be found necessary to insure success.

Our state experiment stations, with their educated specialists, are invaluable to us, and we need to give their reports more of our attention in these days when the progress of orcharding as an extended industry seems so hedged about with difficulties to the uninformed. Ofttimes the investigations of the station clear the way of obstacles for extended and practical effort with our orchards, which would have been a serious hindrance, if not an actual barrier to us, if left to our own unaided efforts. So, then, what we require is not "book" farming alone, nor do we want to rely upon our experiment stations altogether, but to place a high and appreciative value upon each, and to combine them in such a way with our own knowledge and observation, as practical producers, that best results may be obtained. This, then, is what we mean by "intensive" application: to so apply ourselves to the requirments of our business as orchardists, that we will make use of all means at our disposal to place that business on a paying basis.

We must engage in orcharding for the "money there is in it" as well as for any pleasure that may be derived from it, and in order to do so, we want the men for the occasion, as has been already indicated. But some may say, "My orchard don't pay me." That may be very true. I am quite inclined to think it is true with many of our orchards. But whose fault is it that it does not pay: yours or the orchard's? What have you ever done to make it pay? How much fertilizing have you ever done? When you have taken a crop off, what have you returned to the soil for it? How about the pruning, and general care of the trees? and their fruit itself? — How was it gathered, graded, and packed? Did you have sufficient grace to perform the important process of grading in the best possible manner, so as to secure best market prices when brought into competition with other fruit in the market? It requires considerable of the quality of grace in a man in grading, when an apple will almost, but not quite go in first grade,

to place it in the second, and when it will almost go in the second to place it in non-grade, and reject it. Yet this is just what is required, this, and a thoroughness as to detail in all the processes that go to make up successful orcharding, together with a live interest regarding best methods is intensive application and development in its complete sense. With it the orchardist is fully equipped for his business, but without it, success will be but a dream that will never be realized, and I would ask those who say they cannot make orcharding pay,—"Are you the right man in the right place?" "Have you placed yourself in line with present-day requirements, and given your orchards a fair chance to show whether they will pay or not? and, until you do, is it quite fair to jump to the conclusion that apple growing as a business is a failure?

One great trouble with our orcharding seems to be that we regard it too much as a side issue, and do not place it on the same basis of "you *must* pay or go by the board," that we do other farm crops. Too many are disposed to regard the orchard merely as an adjunct to the farm that will take care of itself. If it yields anything, well and good, but if not, we will look to other crops for our income. Now there is not a farm crop grown, nor any farming industry engaged in, that can be made to pay when conducted on that principal. Too many of the farmers in our New England towns are conducting their operations on that line, they are not living on their farms in the true and broad sense of living; they are simply existing there; they are not developing their farms or themselves. If you will allow this divergence from our subject, I will ask if you do not recollect how much was said a few years since about abandoned farms in New England? What was the cause of the farms being abandoned? Would they not support the occupants, if properly managed? That may have been sufficient reason in some woe-begone location but in the majority of cases, we say, no, that was not the reason, but the trouble was the man weakened. He had not prepared himself to meet changed industrial conditions in any branch of production, and had not fitted himself in any way to keep up with the line of progress, so was forced to surrender. Yet those farms are capable of improvement, and embrace some of the best locations for apple culture that the country affords.

But to return to our subject and summarize our remarks. We have endeavored to show that the apple may be made a staple money crop of New England, for the reason that her soil and climate are adapted to its growth. We have the natural home of the apple with us; we can produce fruit of superior flavor and keeping quality; we have also found that the markets are giving our well-grown, carefully harvested, and well selected and packed winter fruit, the preference over any section of our country, and are glad to pay us a premium for it. Now, does it not seem in view of these facts, that the rough and hilly portions of our New England states could be profitably devoted to apple culture? It certainly has that appearance. All that would seem to be required is, for the owners of the soil to awaken to the magnitude of the natural advantages for orcharding they enjoy, and prepare themselves in the ways that have been indicated, to enjoy the benefits and reap the sure rewards that may be theirs, only bearing in mind that in orcharding, as in all other undertakings, "Eternal vigilance is the condition and price of success." I wish I could send my voice up and down to all the farmers in the hilly portions of the New England states to plant apple orchards. We never need fear any permanent over-production. To be sure, we have occasional years of great plenty, and years of scarcity, with a consequent fluctuation in market values; but notwithstanding that I still say, plant orchards and take care of them, and you will reap an abundant reward. I can think of scarcely a farm product but what is subject to the same fluctuation of values as is the apple, so the argument need not weigh with us, and my closing remark will be, that with the right man in the right place, to engage in orcharding, making use of the right methods, the New England states can be made one of the most beautiful and prosperous, and one of the most desirable sections in which to live, that could be found in the entire country. We would hear no more about our "bleak and barren" hillsides, and we could in a few years' time, command the attention and admiration of the entire country, and of all apple-consuming people, in whatever place, for the quantity and superior quality of the New England product.

Discussion.

President Hadwen. After having listened to such an eminently practical talk on the culture of the apple, opportunity is now offered for a further discussion of the subject.

P. Sayward. I would like to ask if the lecturer would limit the selection of commercial varieties to the Baldwin and Greening?

Mr. Richards. The Baldwin will be the apple for us in New England to raise. The Greening buds and blossoms profusely but does not produce fruit heavily.

The Ben Davis apple while popular in other sections of the country is not to be recommended for New England. The time is not far distant when this much overrated apple will be discarded.

Thomas Harrison. I understand the lecturer to recommend that trees be planted so that the collar of the tree is just at the level of the ground. My experience shows that trees should be pruned in pyramidal form and I have trees that bear twelve to fifteen barrels of apples in a bearing season. The difficulty of planting on a hillside is that at some seasons of the year, by the settling of the earth, the trees become imbedded in water.

Mr. Richards. Provision should be made for drainage. I recommend trimming trees low so that the fruit can be gathered more easily and safely and thus avoid damage from bruising.

Varnum Frost. I would like to ask the lecturer what should be the make-up of the soil in order to obtain good fruit? I know that not all the hills of New England are profitable for tree planting and it requires just as much labor to take care of trees as vegetables. I have had much experience in orcharding and in my opinion it does not pay.

Mr. Richards. It is true there are difficulties in the way and it will take a long time to gain wealth in the business; but after your orchard is established in producing condition, you are going to have a steady income from it for many years.

The soil in the western part of the state is rocky and gravelly and is well adapted for apple growing, but east of Worcester I

would not recommend orcharding. Some of the best orchard grounds in New England are in western Massachusetts. Do not go on to clayey ground for an orchard.

Mr. Harrison. I remember that Mr. Gregory once told me that he had never seen a good Russet apple except in clay soil.

Mr. Richards. The Russet apple does very well in clay soil.

Mr. Frost. According to my observation the best apples grew where there was clay in the soil, so near the surface, that the plow turned it up. They had better color and better keeping quality than those grown elsewhere. Nature shows plainly, by the growth of vegetation, the fertility of the soil, as is evident in the comparison of sandy with clayey ground. You see good buildings where you see good land. A large part of New England is not good for anything.

Joseph H. Woodford. The essayist has given us some good ideas regarding the growing of fruit. The Baldwin is undoubtedly the best apple to grow in this section for commercial purposes. I note that two million barrels of apples were shipped from New England ports the past year and it is an incentive to those growing orchards. Some years ago I was in Bombay when a ship arrived with four hundred barrels of apples. They came in good order and sold readily for twelve and one-half dollars a barrel. After one's taste had become tired of tropical fruits, I thought those Baldwin apples the best fruit I had ever tasted.

I have had some trouble with my apples lately, and they do not appear to be keeping as well as formerly. I put one hundred bushels in the cellar last fall and they are badly affected with a fungus. I have noticed that none of it appeared when the apples were first put in, but developed on the fruit after it had been some time in storage.

Michael Sullivan. I have listened with great interest to the lecture of today and I take the same ground as the lecturer regarding the growing of apples in New England. New England has the climate and all the conditions for success in fruit growing, and the time is already at hand when New England will be for the apple what California is for the orange. In Revere where my farm is located the soil is a clay soil and I took two prizes for Baldwin apples at the last exhibition of the Society.

Benjamin P. Ware. I have listened attentively and with great satisfaction to the lecture of this morning. To illustrate somewhat one point which the lecturer has made, I will say that some years ago I was called upon to lecture in the western part of the state. There was a good deal of discontent at that time with the prospects of the farming interests, and they asked me what could be done to improve the condition of things. I told them that their town was well adapted for apple growing and advised them to go to work and set out orchards. One of these farmers met me not long since and said that his town was indebted to me for the suggestions I had made. They had followed my advice and planted fruit trees and thereby had improved very much the condition of things.

Some, we are told, have cut down their orchards, but those men are not the right men in the right place. .Young men can do no better than to set out orchards, for I believe in the future of the apple, especially of New England apples.

The Ben Davis is going out of date and, although it is good to the eye, there are some people who regard flavor as desirable.

E. W. Wood. We are indebted to the speaker for some valuable suggestions for growing orchards. For commercial purposes the Baldwin still holds preëminence in this section and is the best seller in the wholesale market.

We have plenty of cheap land within twenty-five miles of Boston capable of producing good apples, and I can recommend no better business for a young man who seeks to get a living out of the soil. In New England trees twenty-five years old are just in their prime, but in the West, at that age, they have passed their prime.

Mr. Frost. I cannot agree with you.

W. H. Sayward. I am not an agriculturist and know nothing about farming, but I am surprised to hear such differences of opinion on the subject. If this were a convention of doctors or lawyers I would, of course, expect to hear such diverse ideas expressed, but coming from a class of men whom I have been taught to regard as the bulwark of the country, it is indeed surprising. I am also surprised to be informed that the land in the eastern part of the state is not suitable for orchards, but am

glad to hear from Mr. Wood that apples can be grown east of Worcester. New England is, indeed, the favored land for the apple, and no apple can be grown in California to compare with ours.

President Hadwen. I have listened with pleasure to this, the most practical paper I have ever heard on the subject of apple growing. Sixty years ago I planted the seeds from which my orchard is growing, budded the seedlings and cared for them, and it is still a profitable crop. I think the apple is the finest fruit nature has ever given to man. My friend extols the Baldwin, but none have been used in my house for twenty-five years. Why? Because we know of better ones, and in my home we want the best. I say nothing against the Baldwin; it is the apple for the million, and is entitled to respect for it originated in Massachusetts. Some of the best apples known in apple culture originated in New England.

Jacob W. Manning showed photographs of the monument in Wilmington, erected to commemorate the first Baldwin apple tree, and also a picture of Peter M. Gideon who originated the Wealthy apple.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 28, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. President HADWEN presided and the following lecture was delivered:

THE DEMANDS ON AGRICULTURE IN THE PRESENT CENTURY: HOW SHALL WE MEET THEM?

BY HON. J. W. STOCKWELL, BOSTON.

We have glimpses that are revelations, indications that are assurances, giving to us an eminence from which we can scan the future's progress in agriculture, and with somewhat of

certainty prophesy its results. And yet I wonder how this paper would read one-half century from now when the progress shall have so far outrun the anticipation that this view will be looked upon with a pitying smile at the lack of vision, the undervaluing of the great advance now rushing upon us in science, law and adaptability of nature's forces. The agriculture of the twentieth century is a problem beyond the scope of the thought of today, beyond the ken of the keenest imagination. Looking back a half century what wonderful progress. I can look back fifty years and see the old fireplace with its backlog and forestick, the large family that "round the ingle formed a circle wide." The Sunday nights with the apples and cider, the quaint old tunes and the prayer followed by blessed sleep preparing for the week of toil. I remember the wooden moldboard plow that I have chosen to use in the field; the hand rake with the lighter boys in the lead, the elder ones following as the windrow grew. Small pity for the little shaver's heels with the anxious farmer behind and a shower in the west, dark and ominous. It was on just such a day and just these circumstances that a neighbor drove into the field of four acres of grass, laid low by the swing of the scythe, and put in the revolving horserake and saved the hay from the shower that was coming upon us. Who thought of a mowing machine then? Many of you remember its coming, so recent its date. Looking in a late number of one of the magazines you see a picture of twenty-one self-binding reapers doing the work of an army of men on land one-fourth century ago a wilderness, now a part of a three thousand acre farm. A single illustration of the advance that has been made in the last half century, and that must go forward into and through the twentieth century to care for the coming needs, and the natural advance and increase that must be provided for.

There is to be no sudden revolution in means or methods. How quietly has the wonderful advance of the last half century come about! The old methods pushed out, the new coming in with no break, no jar, no strained effort, but as silently, as quietly as the morning light awakes the new day, has its progress been. And yet in review the advance seems a marvel even to us who have lived in it and been a part of it. Just so is to be the future

of this century. But the change must be immense as we project our vision to the close of the century and estimate its necessities.

Let us not underestimate the importance of our calling. The prosperity of the twentieth century must depend on the productive industries; and first in importance are the products of the farm, the products of the soil. For the last decade eighty per cent of all our exports have been agricultural and the exports of the nation represent the wealth of the nation. This ratio of export may not continue. What it shall be rests with the farmer of the twentieth century. We have now a population of seventy-six millions plus. In 1940 we should have one hundred and fifty millions, and, making all allowances, the year 2000 will in all probability see three hundred millions of people to be fed in these United States. If the rest of the world increases in a similar ratio, and the ratio is below anything in the past, it becomes a serious question what shall we eat and drink and wherewithal shall we be clothed. My first proposition is that the soil is sufficient to meet the demand. We are not going to crowd one another off the planet in this century for want of sustenance. But that agriculture may take up the work, keeping step with the necessity, we need to consider some things very carefully. What is the condition of agriculture today? All the world over it is bearing burdens, undue burdens. In our country less than in many others, but these we are not able to bear. I name them and leave them; unequal taxation and therefore unjust taxation; trusts, making extortionate demands of the farmer in goods brought, and placing prices on his products; freights beyond the necessity of remunerative transportation; the price of labor, by these extortions carried above the possibility of profitable return from the farmers' crops; are some of the economic problems that must be met on the very threshold of this century, and the American farmers, realizing these conditions will "dare maintain" their rights. Agriculture is interested in the prosperity of all other industries; much more are all other industries interested in and dependent upon agriculture. The present improved condition and the bright and hopeful outlook at this beginning of the new century is a matter of congratulation in the marts of finance and trade as in the farmers' homes.

Then we need to realize the dignity of our calling; we need to promote these experiments which our state and country are working out, and to realize the necessity of the work they are doing for this country; to encourage each and all who till the soil to do the best work and to find in it the added profit; to inspire in the farmer the desire to excel; to cultivate the love of nature; to realize the grandeur and joy of working together with God, seeking out the subtleties of plant life and multiplying and increasing His gifts for the sustenance of man. In the century on which we have just entered we shall go forward, just as we have done, improvement marking our steps, and the end of the century will find the farmer dignified by his calling and nature's stores not even then half revealed in its ability to feed the world.

The first element to a country's advance is its people. The wealth of a nation is found primarily in its people, not the few, the favored, but the many; they produce it, they multiply it. The wealth of this country has increased fourfold in a quarter of a century. What has produced this wealth? Its natural resources are a factor. Every emigrant coming to these shores is a source of wealth, hands to work and a mouth to be fed, and these mouths give value to the wheat field in the West and the products of the farm in the East. In these homes is the market for the coal from the mine, the products of the soil, and the finished work of the loom. They enhance the value of the railway and the railroad. It is the products of the farm that determine the value of the great railroads that traverse the country to the seaboard, and the stock goes up or down with the prosperity of the farmers of the West, and the reflex prosperity of the productive industries of the East, and it is the great army of workers who are the producers of this wealth, because they are the great bulk of the consumers of the country, and crops without markets may be burned. Good crops, however necessary, if the people who consume them have not the purchasing power, may rot or waste, and the mills stand idle. Therefore whatever affects the laboring classes unfavorably affects the prosperity of the country, and hard conditions in any line are a menace to the welfare of the state.

"Ill fares the land, to hastening ills a prey,
Where wealth accumulates and men decay;
Princes and lords may flourish or may fade,
A breath can make them as a breath has made,
But a bold peasantry, their country's pride,
When once destroyed can never be supplied."

And one step farther. We are proud of our state, its wealth, its resources, its productions. In columns of finance it ranks high, and yet these all must subserve one thing to be truly rich and prosperous, and that is the conditions that produce strong, noble men and noble women, fully equipped to noblest purposes and to grandest aims, and the nearer to nature the child is reared the purer the instincts and the more healthy the development on all lines. The nearer the child to nature the better, the stronger, the man. We too can sing "For the strength of the hills we bless thee our God, our Father's God." There is not a city in these states that is not richly endowed by the strength of country life infusing its every avenue.

God gave us the country and the love of country and the love of nature. The garden is the symbol of all that is best and sweetest from the day of creation to the present moment. The Garden is hallowed by the life of our Lord. Bright and happy, sad and bitter experiences, all found zest, solace and strength there. The hills were His teachers, the wheat was a lesson, the birds were companions and He cared for them. When we take His created things, so dear to the Divine heart, and multiply them as the wheat, beautify them as the lily and the rose, create new varieties, new bounty, new beauty, we are walking so near to God that the very thought of His joy in our work must lift us to higher altitudes and more joyous life. Life is lifted by its surroundings and nature is made so delightful, so beautiful and so improvable, as a ministry, elevating, ennobling, and refining. Therefore must this communion with nature ennoble man, uplift and deify character, so long as the world shall endure.

And second, the element of education or greater knowledge must come to our aid. We talk of nature studies and this is well. Electricity is but a study of nature's forces and we are yet in the primary class in its wonderful uses. Chemistry has done much

for us and yet science's laboratory is so clumsy when compared with the alchemy of nature's crucible. In our chemistry there are mistakes, there are undiscovered potencies, in nature's there has been no change, only greater development and grander results. How wonderful the choice, yes, let us call it the intelligence, hidden in the ground. What teaches the tree to select the soil food that shall produce the leaf, the blossom, and the fruit in their season? Take a bit of earth in your hand, pulverize it, sterilize it if you please, then plant in it three little germs of life, and from that soil will come forth the grain for food, the flower with its fragrance, and the plant with poison in its touch or taste. Who taught these different rootlets to select, collect and diffuse in plant growth such different elements? There is yet much before us to be learned ere we give up nature study or solve the chemistry of plant growth.

"Flower in the crannied wall,
I pluck you out of the crannies;—
Hold you here root and all, in my hand,
Little flower — but if I could understand
What you are, root and all, and all in all,
I should know what God and man is."

Said Dr. Pritchett at the meeting of the Board of Agriculture, at Worcester, in 1901, — "The last quarter century has brought into our possession not only a new series of facts, but what may be called new methods. It is generally called the scientific method. This is nothing other than to get possession of the facts and to apply them in accordance with common sense .... manufactures, mining, all industrial arts, avail themselves freely of the results of modern science. The farmer must do the same thing if he is to keep pace with the developments in manufactures, in mining, and in the other directions. A whole series of facts relating to the soil, the climate, to the life of plants, of insects, to the rotation of crops, are available for his use. The applications of chemistry, of botany, of geology and zoology, bear directly on his work. The twentieth century farmer must use his head as well as his hands if he is to keep step with progress."

The advance of agriculture in the last few years has been grandly suggestive of its future improvement and ability to meet

all demands of the century's growth in population and needs, both domestic and foreign; and yet the storehouse of nature has but half opened its doors to the agriculturist of today. He has simply glimpses of the possibilities of the future, under improved methods and increased knowledge, thanks to the State Board of Agriculture, its societies and its institutes, which to a large degree have led in the advance of agriculture, not only in this state but also in other states in this country. The horticultural societies, their institutes, the meeting together of the advanced agriculturists of a city, county, or state, is of wonderful benefit, inducing friendly rivalry for the best, the newest, the rarest, that nature can produce. The benefit of your meetings and your exhibitions is not a thing that blooms out into fruition in a day; but it is one of the influences that shall enlarge, perfect, beautify and bless the present century. It is well we sometimes take the retrospect glance to give courage to continue the good work, assured that the work is advancing, and that we are in the line of future results, more wonderful than any already achieved.

We are just beginning to appreciate and understand the great agricultural possibilities of America, especially of our country in America. Our inheritance in richness of land is an immense bequest not yet developed, not fully appreciated or recognized. Said Emerson: "Let us realize that this country, the last found, is the great charity of God to the human race." Said President Schurman of Cornell: "This continental heritage of ours is rich in corn and wheat and oats, and cotton and rice and sugar and tobacco, in herds and flocks, and all manner of dairy products, in oil and coal and iron, every precious metal. Our country represents the supreme effort of Providence to build and equip a self-contained home for the human family."

The U. S. Department of Agriculture is doing a great work in a single line for agriculture, in demonstrating the capabilities of this country to supply all its needs, on its own soil, from the fruits of the tropics to the productions of our colder climates. We, the farmers of Massachusetts, are doing a good work in demonstrating the utility of growing the fruits of summer at greater profit in the winter by greenhouse culture, within our own borders, thus giving our people these products, fresh, healthful,

and palatable. This is not an experiment, it is demonstrated fact; and the enlargement in these lines will be wonderful in the early years of the present century. This is not peculiar to our state and nation, but is part of the forward movement in the world's agriculture. Many of our farmers have specialties in summer culture, and the greenhouse culture comes in to give pleasant and profitable employment in the colder season. Not only lettuce, radishes, tomatoes, and cucumbers are now quite extensively grown, but the list is being enlarged yearly, and tobacco shading, and greenhouse culture will soon be a large industry in Massachusetts.

Going along with this enterprise our experiment station has sterilized the soil in experiment plots to destroy injurious bacteria, and this method has been tried by some of the market-gardeners near this city with good results. Once sterilized, with care, the soil is free from injurious germs for a period of years. This discovery has been made very practical by Prof. Stone of the Agricultural College. It revolutionizes greenhouse culture, it takes away the element of uncertainty, and increases the product marvelously, an illustration of which I shall give later.

I make no apology for taking the statistics bearing on this subject from a lecture by Prof. Waugh of our Agricultural College, delivered before the Board of Agriculture at North Adams, and to be found in our forthcoming report.

"Looked at in any light the figures of the last census indicate a specific change in agricultural conditions. The change is in the direction of the investment of more outside capital; and this means, in agriculture as in every other industry, that an economic advance is being made.

Improved and Unimproved Farm Lands.

Another matter which will be interesting to notice in this connection is the disproportionate increase of unimproved farm land. Expressed in percentages of the total area of farm land, the figures for the United States are as follows:

1880,	53.1 per cent improved.
1890,	57.4 per cent improved.
1900,	49.3 per cent improved.

The falling off of 8 per cent in the last decade is especially remarkable. In the State of Massachusetts the figures are still more striking. They follow herewith:

1880,	63.4.
1890,	55.3.
1900,	41.1.

'Only 41.1 per cent of the land in Massachusetts improved today.'

In the case of Massachusetts there has been an absolute, as well as a proportionate decrease, as is shown by the following figures:

1880,	2,128,311 acres improved farm land.
1890,	1,657,024 acres improved farm land.
1900,	1,292,132 acres improved farm land.

Without going any further, it might be assumed that this decreased acreage of cultivated land indicates a more intensive cultivation of the remaining acres. This possibility deepens into certainty when we study the

Value of Farm Products.

The total values of farm products (reckoned for the year preceding the census year) for the United States and Massachusetts, for three particular years are shown herewith;

	United States.	Massachusetts.
1880,	$2,212,540,927	$24,160,881
1890,	2,460,107,454	28,072,500
1900,	4,739,118,752	42,298,274

Even at a glance the increase in the value of farm products is surprising. When examined in comparison with the figures given a moment ago, this increase is truly remarkable. Thus, while the absolute acreage of improved farm land in the United States has increased fifteen per cent during the last decade, the annual value of farm products has increased ninety-two per cent. That

is the record for the United States at large. In the Commonwealth of Massachusetts, with twenty-two per cent *less* land under cultivation, the annual value of farm products has been *increased* fifty-one per cent. That looks like an improvement in agriculture, does it not? I doubt if any other industry in the world can show a similar advance.

These figures show, furthermore, that while there may be some tendency in certain sections of the United States toward the development of agriculture along lines of more extensive farming, the great forward movement of the time is most emphatically in the direction of intensive farming.

The Ratio of Productiveness.

The efficiency of intensive agriculture may be shown on another side by another draft on statistics from the twelfth census. It has been necessary to compute the following figures from data given in the census report, and, since averages are used in the computations, the results may not be accurate to a cent. The general principle is so emphatically brought out, however, that the difference of a few cents here or there is not material. The following table shows the rate of gross income to each acre of farm land, for farms of different sizes. The figures are for the entire United States.

Area of Farms.	Income per acre.
500 to 1,000 acres,	$2 55
260 to 499 acres,	3 56
175 to 259 acres,	4 85
100 to 174 acres,	5 26
50 to 99 acres,	6 71
20 to 49 acres,	9 26
10 to 19 acres,	15 73
3 to 9 acres,	33 83
Under 3 acres,	296 00

The rapid and regular increase in productiveness as the farms grow smaller is too striking to be disregarded or denied. We

should easily be justified in founding upon such data the law of productivity, which might be formulated as follows: the productivity of farm land is inversely proportional to the size of the farm. It may be seen that this law is almost mathematically and exactly correct, according to the foregoing figures."

A few illustrations of new and intensive culture which must mark the century and I close. The first is wheat. Since the beginning of the last century the French peasants have nearly doubled both the area under wheat and the returns from each acre, increasing the product very largely. Forty years ago the crop was good when it yielded twenty-two bushels, today it is thirty-five and the heavier yields reach up to forty and forty-five bushels. There are whole countries, Hesse, for example, where the average crop attains thirty-seven bushels and experimental farms largely increase this amount. Apply this culture and result to our great wheat raising country, with an average yield of twelve and one-half bushels per acre, and increase it to forty and guess the immense product of our country's wheat fields. The present methods and results are the economy of today; to meet the future demand will be the economy of tomorrow. I do not at this writing find the figures, nor can I give you the authority, but am sure of the fact that in Georgia the prize given for the best yield of wheat was awarded to sixteen acres yielding forty-four bushels per acre, or more than seven hundred bushels for the field. Georgia soil is not comparable with the West for wheat raising, and this result is only a hint of the possibilities of wheat raising in this country. The census figures show this lack of intensive culture in every department of general farming; of corn, potatoes, grass, and fruits; but it only needs the spur of remunerative demand, and this country will rush to meet and supply the need. This is general farming and to what it may develop let me give a single illustration.

The Isle of Jersey is the land of open field culture; and the product of the entire island is at the rate of $250 per acre, and this is not in its best sense intensive culture, simply successful farming.

The progress and results obtained in certain countries and islands do not obtain here because conditions do not as yet call for

them. With our vast richness in lands fifteen bushels of wheat per acre have been more profitable than fifty bushels per acre. It is not lack in soil, it is not climatic conditions or changes, that we do not equal the more densely populated countries. We are simply wasteful of our heritage, taking off the cream of richness in the soil, and leaving a heritage of repair for the future to meet. But with the increased demand, rational and specific soil, and selection of seed, the fifteen shall become forty or fifty in the coming years, as naturally and as imperceptibly as the warmth of the sun takes the dew from the grass at our feet.

Now, to turn to the hay crop, one of the money crops of New England; it can easily be raised from less than a ton per acre, as an average, to two and one-half tons with no special culture, just the culture any farmer will give as he finds it profitable for him. On the meadows of Europe, irrigated and enriched, from six to eight tons are obtained in many places, and below Milan, says Kropotkin, 22,000 acres, irrigated with water from the sewers of the city, are yielding from eight to ten tons of hay as a rule.

In oats the average yield is too low for even this country, but better cultivation and new and improved varieties are changing the result to more remunerative returns. Last week's agricultural papers told us of a new variety to produce seventy-five bushels per acre with sturdy stands to carry its product without lodging. This may seem extravagant advertising but it shows the outlook and the expectation. Such instances are sufficient to give us an assurance of future ability in out-door culture to meet the future needs. Even when our present national domain shall be one-half as densely populated as Belgium, and when this country carries a population of one and one-half billions, or more than the present inhabitants of our whole earth, the product of the soil will equal the immense demand.

Next in greenhouse culture. This meets us in the beginning of the century and its success is assured, not only in the immediate vicinity of the cities, but in any remote section of the state, a good selection of products will bring profitable returns, and the results are going to be more and more surprising as we control conditions to insure results.

In the past the soil has been largely brought to and held in

condition by the fertilizing and heat-giving properties of the manures applied. In the future we may believe the soil will be made and the heat provided and maintained by exact and unfailing knowledge. Our own experiment station is showing how to sterilize the soil to insure results, and the astonishing effects of this culture under most favorable conditions, plainly indicating (if these experiments continue to prove as favorable) the immense stride which they insure. In illustration we will glance now to the Isle of Guernsey, the home of greenhouse culture. This island has developed greenhouse culture to a wonderful extent. Ordinary vegetables are grown under glass; the kitchen gardens are glass covered, of which a recent writer says "When I walked through these glass-roofed gardens, which do not know what failure means, I could not but admire the recent conquests of science."

Only one illustration, and this is not new, as I have given it before. The greenhouses of Mr. Bashford, covering thirteen acres, of which Prince Kropotkin says: "When you enter one of these huge glass houses, nine hundred feet long by forty-six feet wide, and your eye scans that world of green embellished by the reddening grapes or tomatoes, you forget the ugliness of the outside view. As to results I cannot better characterize them than by quoting what Mr. Bear, an English writer, who wrote after a visit to this establishment, that the money returns from these thirteen acres "greatly exceed those of an ordinary English farm of thirteen hundred acres, and the product of one year is as follows: 50,000 lbs. grapes cut from May to October; 160,000 lbs. tomatoes; 60,000 lbs. potatoes; 12,000 of shelled peas; 4,000 lbs. beans, all this, besides the subsidiary crops."

This I believe to be largely the culture of the future in Massachusetts. With the best home market in the world within our borders we are to meet all the demands of this market. Greenhouse culture is increasing rapidly and with soil sterilized and fertilizers adapted to plant growth it must increase still further, for in every part of the state it is found more profitable than the old ways and the old farming. Along the northern range of Worcester County cucumbers and tomatoes are added to flowers in greenhouse culture, Leominster leading in this line. From the

Berkshire hills carnations are shipped to the Springfield market, and I have not yet heard of a failure even under present methods; and with sterilized soil, the proper application of heat, and fuller knowledge of fertilizers, I can see no possibility of failure in the future. I look forward to see it said of our state as of the Isle of Guernsey, "Guernsey, like the suburbs of Paris, is a land of market gardening, which has developed into greenhouse culture. All over the island wherever you look you see greenhouses. They rise amid the fields and from behind the trees. They are piled upon one another on the steep slopes of the hills." Only one illustration of production from our College. The past season Professor Stone grew under glass from nine plants of the Rocky Ford variety, three hundred and seventy-six melons, and those of us who were at the June commencement had an opportunity to taste their lusciousness. Compare this with the blighted crops grown in the open air all over the state, and it seems strange that we so slowly adapt ourselves to the better conditions for sure returns.

The progress in agriculture and horticulture is not sufficiently well known and it was with great pleasure that I read the very admirable statement of Dr. Walker of our College before your Society, January 31, on what is being done by the United States government, for this is ably supplemented by our experiment station, and adapted to our conditions. The farmers of the United States, the farmers of our own state, do not realize the great, and in some aspects wonderful work, that is being done for them and through them to the individual, the state, the nation, and the world, by these investigations, experiments, and successes. We used to believe we must work in accord with soil and climate and it was well. It was a part of the success of the past, but today the gardeners make the climate, change the character of the product, acclimatize the plants, change the conditions, raise crop succeeding crop in rapid succession, make the soil they want for each special crop, fertilize and cross fertilize as they desire, sterilize the soil to a wonderful increase of growth and productiveness, produce forage or seed at will, almost, and all this is but the beginning of the new era of this new century. True we may say with Tennyson,

> "Little flower — but if I could understand
> What you are, root and all, and all in all,"

nevertheless we are coming nearer to the heart of nature's forces and the new varieties, the new colors, the improvement year by year in your halls of exhibition, are the proofs of our creative power. The future of this century is assured from the past alone, yet the future shall develop most wonderful advances.

All this proves that our means of obtaining whatever we want upon any soil, under any climate, have been so much improved in these last years of the past century, that we cannot foresee the results that may follow, or the limit of the power of production of the soil. Therefore we see that we need neither war nor pestilence to carry off the surplus population, and starvation will be only the occasional accident of the present century as in the past. The earth is sufficient, the knowledge shall continue to grow with assured results, and the essayist at the beginning of the next century will wonder at our questioning, and confidently predict the future.

Looking forward in the present century we see a wonderful change; let me picture it. We see the fruits of summer grown in January in our own greenhouses, more profitably than in their proper season. We see our own dependent population supplied with every luxury by New England enterprise on New England soil. We see the farmer taking his old stand as a leader in all good enterprises. We see his sons, educated and strong, taking their rightful place and exerting their old-time influence, the strength of the hills, the backbone of the cities. We see the electric car speeding its way from town to town and from village to village, carrying the child to the larger and better schools, and giving free mail delivery to the homes of the country as well as to the city, and carrying the produce from the farm producer to the town or city consumer. We see equal taxation resting "like the atmosphere" on rich and poor alike, every man according to his ability. We see the trusts that hold the farmers in their iron grasp destroyed or made to subserve righteous ends for the benefit of all. We see the bright day when arbitration shall settle the differences of nations and war's costly tribute shall cease. We see the home in which all comforts are found and all graces abound, its approaches, lines of beauty, its crown of blessing the love and contentment that dwell therein. We see wealth of char-

acter and honesty of purpose and life more honored than gold, and honest industry more prized than the indolence of wealth; money valued for the good it can do.

"The man 's the gold for all that."

We see all this, not as a mirage or a far-distant view, but growing nearer and nearer, and never hastening so rapidly to its accomplishment as today.

The development of agriculture in the last decade has been a wonderful illustration of its future possibilities and promise. The natural resources brought to our aid and science that seizes upon and adapts them to our uses. The investigations now bringing their results to us in the great work of the Agricultural Department at Washington, our experiment stations, and the practical results being wrought by and through them, the agricultural knowledge attained at our agricultural colleges and working its results in the actual operations of our progressive farmers. The new departure of proved value in the production of crops, each and all working together have so largely outrun the increase in population that we look upon the present century with its threefold increase, not only sure that the agriculture of this country will meet all its demands, but that it will at its close stand as today, the granary of the world.

Discussion.

President Hadwen. After having listened to this most interesting and eloquent address, I now declare the meeting open for the discussion of the subject, and will call upon Mr. Ware to break the ice.

Benjamin P. Ware. I have listened very attentively and very profitably to the essay. I have often thought how it is going to be possible in the future to feed the rapidly increasing population of this great country of ours. This question has come up from time to time and we have had today an answer to it.

In riding on any of the railroads across this state, you will be surprised to see what a small proportion of the land is really under cultivation, and with the increase of production by the methods

stated in the lecture, I think we need have no fear as to how the people in the future are to be fed.

I have heard it seriously discussed that chemical science is going to feed the public in the future; that our food will be made up into little tablets that we can carry around in our vest pockets. I am thankful for the assurance, that the lecturer gives us today, that we will not have to be fed on chemicals in the future, and that we will not in our day, nor will our descendants be obliged to give up the pleasure of catering to healthy appetites. It has been shown by the lecturer that we need not worry about the future, in this respect at least.

Thomas Harrison. I would like to ask what are the methods of the State Board of Agriculture in encouraging the production of crops. Why would it not be a good plan to exempt from taxation for a term of years land that is being improved by cultivation? The farmer spends many years in growing an orchard, for instance, and is taxed at an increasing rate every year, often paying more in taxes than the income he receives from his land. It would be a real help to the farmer if, during the period of improvement of his land, a certain number of acres were made free from taxation.

Mr. Stockwell. Massachusetts is continually doing something for the farmer, not by giving him money, but by aiding him to improve his farm. The farmers of this country are far differently situated from those of the old world. Here the small farmer owns his land; there he only rents it. Here the farmer gets a little ahead each year and, as a class, is getting a little richer all the time.

Every boy that goes from the Agricultural College at Amherst is doing something for the farmer, and every year shows progress in more intensive cultivation.

Varnum Frost. I am glad to hear one man speak a good word for the agriculturist, for it is a trade side-tracked the world over. Farming today is the closest in my remembrance. It was easier forty years ago to get ten dollars for produce than it is now to get two dollars; then the crops did better and were of better quality; and as for science, Where is the science that comes in in farming? A man who has common sense, who likes work better than any

play, is qualified for the business and will make farming pay. I presume the majority of this audience takes it all in. Sterilization of the soil originated at Amherst. We have about as good farmers out in Arlington as there are anywhere, but they now condemn sterilization and are having trouble with it. It is a failure after the first crop, for mildew sets in and does great damage. Greenhouses freeze up and those who have had experience are not so enthusiastic about farming.

Mr. Stockwell. I am very glad that this side of the subject has come up. It is true that farming is not as profitable as we would like to have it, but as a rule greenhouse culture is today profitable, and is destined to become more so, especially as it has been shown what a yard of earth can do. I do believe that the science and knowledge that are being placed at the service of the farmer by the United States Department of Agriculture and the State of Massachusetts are a great help and that the outlook for agriculture was never brighter than it is today.

Mr. Frost. The great trouble with the farmer of today is the extravagance of the age. Seventy-five per cent of the people live beyond their means. Through the extravagant ideas of the times the taxes are being steadily increased, and the rate in some of our suburban towns, which used to be eight dollars on a thousand, is now twenty dollars. The farmer should get a larger proportion of what his goods are really sold for; he disposes of his produce to the middleman, and the middleman gets more for handling it than the farmer does for raising it.

Mr. Harrison. I want to suggest how the farmer can be benefited by the State Board of Agriculture. I think that anyone starting an orchard should be exempt from taxation for five years.

Mr. Ware. I do not think it is desirable to release an orchard from taxation. Many attempts have been made to exempt farm lands from taxes, but that would be class legislation.

If you are going to exempt any landed property it would seem as if it ought to be woodland, where it takes from twenty to thirty years to get a crop.

I do not think it necessary to subsidize orcharding; it is too much like a ship subsidy; and farmers do not approve of that. Farmers are able to handle their own business and are, on the

whole, as prosperous as any class of citizens. Speaking about the work of the United States Department of Agriculture and its value to the farmer, I want to mention one fact that has come under my observation.

The seeds sent out by the Department of Agriculture are not, as is well known, used generally by the farmers, but I know of one case in which they have produced a good thing. The old Mason cabbage, now called the Warren Stone Mason, which has been extensively grown for the last forty years, came from a package of those government seeds.

It is decidedly the best cabbage grown and has been worth hundreds of thousands of dollars to the farmers of Massachusetts.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 14, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. President HADWEN presided and the following lecture was delivered under the John Lewis Russell Bequest:

THE DISEASES OF THE POTATO IN RELATION TO ITS DEVELOPMENT.

BY PROF. L. R. JONES, UNIVERSITY OF VERMONT.

The potato has long been one of the most commonly cultivated plants of our fields and gardens. Yet it is the most variable in yield of our standard crops and the most liable to diseases and failure from causes the least understood. Why is this? A partial explanation may be found in the fact that it is a semi-tropical plant which has been brought under cultivation in the northern climate by rapid and intensive breeding. Our season of growth is shorter by one-third or even one-half than that of its natural habitat. There it reproduces itself primarily by seeds and secondarily by tubers. Here, by breeding and selection, man has

so changed the conditions that seed production is almost unknown, while the size and number of the tubers are enormously increased.

For information upon these points I am largely indebted to Mr. Cyrus G. Pringle, the botanical explorer, who is thoroughly acquainted with the potato, both wild and cultivated, as it occurs in Mexico. In the gardens there, it is planted in March and harvested in December. The period of blossoming and maturing seed is in August and September, whereas the tubers are formed one or two months later.

Reproduction by seeds is a sexual process, that by tubers is vegetative. Both are exhaustive of vital forces. The two are, therefore, in a physiological sense opposed, and cannot well be carried on at the same time. Under the natural condition of the wild plant the seed precedes, with our shorter season and intensive culture we have crowded the two processes together until they tend to overlap. That is, we have forced the tuber production back into the period which in the wild plant is given to the production of flowers and seeds. As a result we have, just after the potato plant comes into blossom, a strained and unnatural condition; a state of physiological tension, of stress between two opposing vital tendencies. According to the mode of its ancestors the major part of the plant's energy would then be tending upward toward flower and seed; but tuber production in the high-bred specialized plant begins immediately and the acquired tendency is for this process to claim the major part of the food.

As a result of this conflict of tendencies in the plant there occurs a *critical period* during which the continued health of the plant, if not its very life, hangs in the balance.

Whether this explanation is correct or not, the fact is certain that the fortnight including and immediately following the blossoming period is the turning point, the crisis in the life of the potato plant.

The production of a profitable crop depends more upon its protection at this period than at any other during its growth. Before this time it will quickly recover from very severe ravages of insects; a little later it will do the same; but serious injury to the foliage or arrest of development by unfavorable soil conditions at this period will start the plant upon a decline which is

disastrous to the crop of tubers and leads to the premature death of the tops; and, in my experience, no subsequent treatment makes amends for neglect at this time. If, however, the plant is carried in full vigor through this critical period it starts upon what is virtually a new lease of life, a vegetative period which, with the more vigorous varieties in our northern climate seems to have no natural terminus. The length of this subsequent period of vegetative development seems dependent not on internal factors primarily, but on external conditions, chiefly climatic, which have so varied at Burlington during recent years as to bring successive crops of the same variety and on the same soil to so-called maturity at dates varying from September 25 to November 10. It is during this second or vegetative period that all of the marketable crop is developed. It is for this that we have grown the plants, and it is important, therefore, to inquire more exactly when and at what rate this development occurs. In order so to trace the relative rate of growth of the crop through the months of August and September partial diggings have been made with ten day intervals during three seasons at the Vermont Experiment Station. These have revealed the surprising fact that with vigorous varieties, properly cared for, one-half of the marketable crop of tubers develops after the 22d of August. The following results of one such season's growth is typical of them all:

The Development of the Potato Tuber.

WHITE STAR POTATOES, PLANTED MAY 20th, AT BURLINGTON, VT., YIELDS AND SIZE OF TUBERS AT DIFFERENT DATES.

Date of digging.	Total yield per acre.	Yield of marketable size.	Average size of tubers.
Aug. 2	58 bu.	30 bu.	1.6 ounces.
" 12	115 "	75 "	2 "
" 22	230 "	163 "	3.7 "
Sept. 1	304 "	234 "	4.4 "
" 12	356 "	303 "	5.2 "
" 22	379 "	353 "	5.7 "

It is noteworthy as indicating how little the fundamental importance of the continuous health of the plant during this vege-

tative period is appreciated, that the date of its beginning is almost coincident with that when the average potato grower abandons his plants to weeds, insects, and blights. The thrifty New England farmer is ashamed to have his neighbors see weeds or bugs in his field before this period, but on the other hand he feels called upon to defend, if not to apologize for his course, if later than this he pulls weeds, or sprays to protect his plants. Yet the beginning of this vegetative period is the very time when certain insects, notably flea-beetles and grasshoppers, do their worst work; and it is often serious work, indeed. If a period of dry weather follows, and, if the soil is either caked or weedy, tip-burn is the inevitable result; and when this begins it is as a rule prophetic of the steady decline of the plant to its death. Tip-burn is a physiological disease due to inadequate water supply. The potato requires more water than do most plants; indeed, the production of a full crop demands that fully one-fourth of all the water that falls on the soil during the entire season shall be absorbed by the plant, and either retained or passed off through its leaves. Moreover, the time of most active demand for this water is at and shortly following the critical period. The securing of this water supply is dependent upon three things. First, the water-containing character of the soil, determined by humus-content and through pulverization. Second, surface tillage to conserve this. Third, healthy foliage to carry on transpiration which is the pumping process in plants. Much of the so-called "blight" of potato foliage is really tip-burn, due to insufficient attention to one or all of these things.

Starch manufacture is scarcely second to water supply in importance for tuber formation; this occurs entirely in the green leaves under the invigorating influence of sunlight. The extent of healthy surface is, therefore, an exact index to the capacity for starch formation. When it is remembered that one-half of the possible crop may be formed after the third week in August, the importance of the preservation of the healthy foliage through the early autumn becomes apparent. Certainly the average potato grower has no just conception of his dependence upon this late foliage for a full crop. As evidence of this we are frequently asked by intelligent farmers whether there is not danger of their

plants "running to tops" as a result of the spraying, and whether, in that case, they should not prune them back or break them down. In one case last summer, a man who had sprayed and thus secured a fine stand of healthy plants was advised by his neighbors that he was ruining his crop and must cut the stems back. About the middle of August he wished us to visit his field and advise him in the matter. We did so and offered, on behalf of our Experiment Station, to pay him for possible loss if he would cut back the tops by one-half in alternate rows in his field and report the outcome to the Station. The result was a yield of one hundred and fifty-two pounds where pruned as compared with two hundred and twenty-one pounds where unmolested. In one form or another this misunderstanding of the necessity of healthy foliage for full tuber production is so common that we have been led to seek for its explanation. Apparently it is chiefly founded on two misconceptions. The first is based on the fact that certain conditions, such as moist cloudy weather, which lead to the growth of rank foliage, do not give correspondingly large yields; but a moment's thought shows that the difficulty here is not that there is too much foliage, but that there is too little sunlight. The second and more general misconception is the confusion of the principles governing seed reproduction, as it occurs in apples and tomatoes, with those governing vegetative reproduction, as it occurs in the potato. It is a common practice to stimulate the former by pruning and the inference is wrongly made that the same process may give like results with the latter.

But the greatest enemies of the New England potato crop in this latter stage of its development are the diseases due to fungi or bacteria — the blights and the rots.

Twelve years ago when one spoke of potato blights only one thing was suggested — the dreaded mildew; that fungus which swept the fields of Ireland in 1845 and left the land famine-stricken. Perhaps, indeed, we may date the earnest study of plant diseases from that year. Berkeley and De Bary in Europe, and later Farlow in this country, together with other mycologists gave careful study to this disease and proved beyond question that it was caused by a fungus [1] which invades the leaves and passes from

[1] Phytophthora infestans.

them to the tubers causing the dry rot. This malady is more or less familiar to all potato growers, but as a rule they dread it most because of the rot. As a matter of fact this direct loss from rot is relatively of less account under our New England condition than is the indirect loss from the blight. We appreciate the former more keenly because it occurs after the crop is grown, perhaps after it is harvested. It is visible, tangible, and loudly mourned when it occurs, but the premature death of the foliage which means the loss of possible growth of what might be, is actually of far greater consequence. For example: in 1893 the blight appeared upon our field at Burlington, August 10 and by August 20 practically every unsprayed plant in the field was dead. Upon digging in September the yield of sound tubers was found to be one hundred bushels per acre, with some twenty-five bushels showing the rot. This seemed a serious loss but compare with it the conditions where the plants were sprayed, when the yield was three hundred and twenty-four bushels of sound tubers per acre, and only three bushels of rotten ones. The total gain from checking the disease was two hundred and twenty-four bushels per acre, but of this only twenty-one bushels, or less than ten per cent was due to the checking of the rot, the balance, two hundred and one bushels, was due to the prolongation of the life of the leaves. And if we compare the date just given for the death of the plants with those previously listed for the development of the tubers, it is at once evident how this is explained. Indeed, so used have the potato growers become to these ravages of insect and blight on the potato foliage in August and September, that a majority seem to consider them inevitable, if, indeed, they do not think them the natural accompaniment of the ripening process of the plant. As a matter of observation in Vermont I believe I would be overstating the facts if I said that twenty-five per cent of the potato plants reach even approximate maturity; in other words over seventy-five per cent of them die prematurely.

Thus far we have traced the relation of but one fungus to this destruction of the potato foliage. Soon after the development of the present system of Agricultural Experiment Stations, critical attention was directed anew to the causes of the potato blights of Vermont and other sections, and it was found that there was

much trouble from some obscure diseases other than those caused by this familiar mildew. In certain seasons a leaf-spot fungus[1] causes more loss in many parts of New England than does the mildew, and further south and west the proportional destructiveness of this more recently recognized fungus is even greater. It is no "new" fungus; indeed, I find it on the specimens of the wild potato which Mr. Pringle brings from Mexico. It was overlooked until about ten years ago, simply because it was so intimately associated with the mildew in its development and so similar in appearance. From the economic standpoint, however, it differs from the mildew in a noteworthy respect, in that it never leads to the rot. To distinguish these two diseases the popular names in use in this country are "early blight" for this latter as contrasted with the "late blight" and "rot" of the former.

More recently Dr. Erwin F. Smith of the National Department of Agriculture has shown that the most serious malady of potatoes in the South known as the brown rot is due to neither of these fungi but to a bacterium.[2] This attacks both tops and tubers and is very destructive. I have learned of its occurrence in the Hudson valley as far north as Newburgh and without doubt, it has invaded southern New England, although I have not as yet observed it in Vermont. A stem blight, apparently due to bacteria, was reported to us from two sections of Vermont last year and may be more common than is yet known. A similar disease due to bacteria has been reported this last year as destructive in France and other European countries.

Again I would remind you that all of these diseases, unless possibly it is the brown rot, are to be feared chiefly because they destroy the tops prematurely and so shorten the later growing period of the tubers.

In closing this part of the discussion, What can be said as to remedies? In the first place let us emphasize the importance of more attention to the soil conditions — humus, tilth, and to cultivation, with the view of increasing and conserving the water supply. These make the large crop possible. Having done this

[1] Alternaria solani.

[2] Bacillus solanacearum.

one cannot afford not to spray. As a result of comparative trials of a wide variety of fungicides extending over thirteen years, at the Vermont Experiment Station, we have found Bordeaux-arsenic-mixture to be an almost perfect preventive of all the diseases and insects attacking the foliage of the potato plants. It is apparently almost worthy the title of a "cure-all." During this time we have not failed once in carrying the foliage upon vigorous late potatoes to practically full maturity by making from one to three applications of this mixture following the blossoming period. The various dates of spraying and the gains therefrom are briefly shown in the following tabular summary.

GAINS FROM USE OF BORDEAUX MIXTURE ON LATE POTATOES.

Variety	Planted	Sprayed	Yield per acre		Gain per acre
			Where sprayed	Where not sprayed	
White Star ..	May 11, 1891..	Aug. 26, Sept. 8.....	313 bu.	248 bu.	65 bu.
" " ..	May 20, 1892..	July 30, Aug. 13, 25....	291 bu.	99 bu.	192 bu.
" " ..	May 20, 1893..	Aug. 1, 16, 29.....	338 bu.	114 bu.	224 bu.
" " ..	Apr. 26, 1894..	June 16, July 17, Aug. 30	328 bu.	251 bu.	72 bu.
" " ..	May 20, 1895..	July 25, Aug. 13, 31....	389 bu.	219 bu.	170 bu.
Polaris	May 15, 1896..	Aug. 7, 21.....	325 bu.	257 bu.	68 bu.
"	June 1, 1897..	July 27, Aug. 17, 28.....	151 bu.	80 bu.	71 bu.
White Star ..	May 10, 1898..	July 21, Aug. 10.....	238 bu.	112 bu.	126 bu.
Average 3 yrs	May 18, 1899..	July 26, Aug. 17, Sept. 8	229 bu.	161 bu.	68 bu.
Delaware	May 23, 1900..	Aug. 4, 23.....	285 bu.	225 bu.	60 bu.
"	May 25, 1901..	July 20, Aug. 21.....	170 bu.	54 bu.	68 bu.
"	May 15, 1902..	Aug. 1, 20.....	298 bu.	164 bu.	134 bu.
Averages for twelve years.....			280 bu.	165 bu.	115 bu.

In comparison with this mixture we have tested every other fungicide of any promise which has come to our attention, and find nothing equal to it in the fresh home-made form, although some of the ready-made Bordeaux mixtures on the market are excellent. Let me add my testimony to that of previous lecturers that Bordeaux mixture varies widely in character depending upon the way it is made.

Two practical questions are frequently asked, which have not as yet been touched upon. First, the relation of date of digging to the development of rot, *i. e.*, whether, in case the blight has killed the tops it is better to dig the crop at once, or to let it lie for

sometime in the soil. There will be serious loss from rotting in the soil in the latter case and from rotting in the cellar in the former. Which is the lesser of the two evils? Last season the blight began to develop early and an unusually good opportunity was offered for testing the matter. Experimental diggings were made by the Vermont Station at four dates ranging from August 25 to September 30, and in six fields including various conditions of soil and disease none of them having been sprayed. The results are summarized in the following table.

Dates of digging	Aug. 25	Sept. 6	Sept. 18	Sept. 25
Average total wt. per row at each date	28.6 lbs.	26.2 lbs.	25.9 lbs.	24.9 lbs.
" weight which were sound on Sept. 30	18.7 "	20.9 "	23.5 "	23.0 "
" decay on and before Sept. 30 in pounds	10. "	5.3 "	2.4 "	1.9 "
in percent	35 %	20 %	9 %	8 %

Without going into the details, we would say that as nearly as we can formulate conclusions based upon this trial of a single year, it is that where the tops have blighted and there is danger of rot quite as much of it will occur in the cellar as in the field and, therefore, it is better to delay the digging until some ten days or more after the last tops are dead; and a longer delay will do no harm.

The other question is, as to whether there is hope that science will suggest some way to rid us of the disease other than by the troublesome method of spraying. It has not done so up to present time, therefore it behooves us to spray; but will it in the future? So far as known the late-blight fungus lives over winter only in the tubers and is perpetuated from year to year in such infected tubers used as seed. If so, cannot they be disinfected? Unfortunately, this fungus is not, like the potato scab germs, lodged on the surface; it is internal and, therefore, chemical disinfectants offer no promise. The only hopeful suggestion has come from a European botanist, (Jensen), and is based on the known sensitiveness of the fungus to heat. It is that by heating such infected tubers for about six hours at a temperature of 104°

to 108° F. in a dry oven, the fungus may be killed without injury to the tubers. This matter has been tested at the Vermont Station and the tubers grew all right. It has not been fully demonstrated, however, that this treatment destroys the fungus, and even if it does it is not practical for the ordinary potato grower.

Unquestionably, however, more attention should be given to the selection of uninfected seed. The thought is worth suggesting, at least, that if every potato grower in this country were to plant sound seed potatoes for one season the fungus might go out of existence, so far as we are concerned, until again imported. There is another hope, however. The variability shown by man and the domestic animals in individual power of disease-resistance has led plant breeders in recent years to give increasing attention to the possibility of such individuality of resistance in plants. It has long been known to horticulturists that this occurs with some varieties, at least, toward certain diseases.

For example: a few varieties of apples are perfectly resistant to the rust, and some to a lesser degree resistant to scab. Recent investigations by botanists of the National Department of Agriculture have led to the discovery of remarkable disease-resistance in individual cotton plants and more recently in cow peas and, moreover, this is perpetuated in the offspring, so that seed of these "iron clad" races are now being distributed by the government to the southern farmers. Plant pathologists and plant breeders should be stimulated by these results to renewed courage in their search for resistant varieties and individuals in other kinds of pest-ridden cultivated plants. A blight-proof potato may not be an impossibility.

A series of lantern slides were shown illustrating the development of the potato, the nature of its diseases, the relative values of various fungicides as used in potato fields and orchards, and methods of spraying. In connection with these the following practical points were brought out:

The bordeaux-arsenite mixture excels in that it is a complete

fungicide and insecticide and very adhesive. In its preparation one should first dilute the copper-sulphate solution and the lime water, then either pour the former into the latter, or pour both into a common receptacle and mix quickly and thoroughly. Unless made in this way the mixture is liable to clog pump or nozzle and is less adhesive.

When Paris green is applied in water, apart from the Bordeaux mixture, an equal weight of lime should be mixed with it to prevent danger of burning the foliage.

For most farms the barrel pump operated by hand power is most economical and satisfactory. When used in the potato field this is best carried on a one-horse cart, with two wheels, set about six feet apart so as to straddle two rows while the horse walks between. Excellent power pumps are now on the market for larger operators.

Slides were shown illustrating the fact that proper spraying prevents the scabbing of pears and apples.

The results of four applications of Bordeaux-Paris-green mixture as compared with Paris green alone, in one orchard, were as follows, the value of the crop being practically doubled:

	1st class.	*2d class.*	*3d class.*
Flemish Beauty Pear, sprayed,	94 per cent.	6 per cent.	0 per cent.
" " " not sprayed,	55 "	43 "	2 "
Winter Strawberry Apple, sprayed,	65 "	24 "	11 "
" " " not sprayed,	31 "	45 "	24 "

In another orchard of Fameuse or Snow apples upon which the scab is very destructive the gains were even more noteworthy:

	"Select"	*1st class.*	*2d class.*	*3d class.*
Sprayed:	40 per cent.	20 per cent	30 per cent.	10 per cent.
Not sprayed:	none	5 apples!	4 "	96 "

The apples from each tree were placed on the market. Those from the sprayed tree brought $15.44, from the unsprayed tree $2.15.

Discussion.

Benjamin P. Ware said he wished to make one or two inquiries of the lecturer. He had had some difficulty in properly preparing the Bordeaux mixture so that it would not clog the nozzle of the sprayer, and it had been recommended to him to use the lime water after allowing the lime to settle. He had used the usual formula of ten pounds of lime to fifty gallons of water. He asked if this would have the full power and strength necessary to the mixture. He also asked when potatoes should be sprayed and how many times during the season.

The lecturer replied that he could not believe that the lime water could be used with success in the preparation of the Bordeaux mixture. As to the spraying of potatoes he did not find it profitable to spray more than two or three times; twice on an average, and usually in August; the first application to be made during the first week and the second in the third week of the month.

These statements, however, are based upon Vermont conditions; further south there are certain of these maladies that appear earlier in the season.

The potato blight commences when the plant is in its most vigorous growth and the damp, humid weather of August gives the fungus its opportunity for development. The rule in spraying is always to get a little ahead of the earliest possible appearance of the blight.

The destructive development of the fungus is dependent upon the coincidence of certain weather conditions and a certain stage of growth of the plant. The blight rarely or never shows until the potato passes the blossoming stage, and the extent of the development then depends upon the humidity of the atmosphere.

Aaron Low inquired whether, if it should rain soon after spraying, it would be necessary to repeat at once.

Professor Jones replied that the peculiar value of the Bordeaux mixture is its capacity to hold. It would set in three hours, so that a rain coming on after that time would not render a repetition of the spraying necessary. He had found that with some of the less adhesive fungicides, the addition of a little glue or molasses was beneficial.

Thomas Harrison asked what was the value of the lime in the Bordeaux mixture, and if any substitute for it could be used.

Professor Jones stated that the lime was necessary to neutralize the acid of the mixture, and that no satisfactory substitute had been found. Sal soda had been tried, but nothing superior to lime was known. The soda does not have the adhesive quality of the lime.

Mr. Low called attention to the fact that the potato plant does not now produce the quantity of seed balls that it used to thirty or more years ago, and asked the reason for this change in the habit of the plant.

Professor Jones, in reply, stated that he did not believe it to be a sign of weakness, neither did he believe it a result of Paris green poisoning, as some have thought, but that it represents a change in the life history of the plant, brought about by cultivation. We have continually bred away from seed production, to tuber production, and we could doubtless breed back again, if we desired, to seed production, at the expense of tuber production.

Mr. Ware asked, whether if the potato blight had manifested itself in a small way, spraying would check it.

To this the lecturer answered, that it is important to begin spraying before the blight appears, for it spreads very rapidly. If done in season it would check it.

Mr. Harrison stated, that in planting potatoes some advocate the planting of small tubers and some of large ones, cutting these latter to two eyes. He asked the lecturer's opinion on this matter.

Professor Jones answered that it is the result of experience that the more weight of seed you put into the ground, the more yield. You get more yield where you put in more starch as food for the young plants.

We can best afford to take ten or fifteen bushels of seed to the acre under ordinary New England conditions. He approved of planting small potatoes whole, and larger ones cut in halves.

Mr. Ware asked at what stage of growth they should be sprayed.

Professor Jones replied that spraying should begin promptly after blossoming, or perhaps, one application may be made before the blooming period, when the plant is in its most vigorous growth.

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EXPERIMENT STATION REPORTS WANTED.

The Massachusetts Horticultural Society is endeavoring to collect complete sets of the Bulletins and other publications of all the Agricultural Experiment Stations in the United States and Canada. Those named below are wanting, and any person having a spare copy will confer a favor by addressing the Librarian of the Society, Horticultural Hall, No. 300 Massachusetts Ave., Boston.

Alabama (Ag. and Mech. College Station). — Bulletins 4–6 (1884), 7–10 and 1–4 (1885), and 5–9 (1886). 7th Annual Report, for 1894, and 9th, for 1896.

Alabama (Canebrake Station).— All Bulletins later than 18, and all Annual Reports later than the 3d, for 1890.

Alabama (Tuskegee Station).— Bulletin 2.

Arizona.— 4th Annual Report, for 1893.

Arkansas.— Bulletin 1. All Annual Reports later than the 4th, for 1891, except the 8th, for 1895.

California.— Bulletin 32, 1878, and 1, 2, 3, 5 and 50, New Series.

Colorado.— Bulletin 3.

Connecticut (New Haven Station). — Bulletins 1 to 67, inclusive. Annual Reports for 1877 and 1879 to 1883, inclusive.

Florida.— Annual Report for 1892.

Indiana (Purdue Univ. School of Ag.).— Bulletin 1. College Reports 1–14, inclusive.

Iowa.— Bulletins 54, 55 and 56. (The original bulletins).

Kentucky.— Bulletin 10.

Michigan. — Special Bulletin 1. 6th Annual Report for 1892-93 (contained in Report of Michigan Board of Agriculture, 1893).

Missouri. — Bulletins 9, 13, 15, 16, 19, 20, 25 and 26 of Old Series. All Annual Reports since the 1st, for 1888, except those for 1896 to 1898, inclusive.

Montana. — Bulletins 27, 29 and 31.

New Jersey.— Bulletins 1, 4, 5, 15, 27 and 28.

New Mexico. — Eighth College Catalogue, 1897–98.

New York (Cornell). — 1st Annual Report, 1881–82, and all between that and 1888, except the 2nd, for 1882-83. (Reports of Agricultural Department of Cornell University.)

North Carolina.— Bulletins 1 to 56, inclusive, 69, 2d ed., and 174. 1st to 7th Biennial Reports. Meteorological Division, Bulletin 2 (68*b*). Special Bulletins 1 (77 *c*) and 4 (82*a*). Weekly Weather Crop Bulletins 1–21, 1888; 1–24, 1889; 1–25, 1890; 2 and 4, 1891.

North Dakota.— 4th Annual Report for 1893.

Ohio.— All Bulletins of First Series, except 16, 17, 18 and 19.

Oklahoma.— All Annual Reports previous to that for 1896–97, except that for 1893–94.

Pennsylvania. — Annual Reports for 1869, 1872, 1879–80, 1881, 1882, 1883 and 1884. [All issued by the State College.] Bulletin of Information No. 1.

South Carolina.— All Bulletins of the Old Series (previous to 1888) on the work of the Experimental Farm of the South Carolina College. 3 l Annual Report, for 1890, and 6th, for 1893.

Texas.— College Bulletins 1–5, 1883-1887.

Virginia.— 10th Annual Report for 1898–99.

Washington. — Bulletins 28 and 29. 6th, 7th and 8th Annual Reports, for 1895–96 1896–97, and 1897–98.

West Virginia. — Special Bulletin — Potash and Paying Crops, 1890.

Wyoming.— Bulletins 2 to 4, 9 and 10.

Ontario Department of Agriculture, Toronto.— Bureau of Industries.— Agricultural Returns to the Ontario Bureau of Industries, Nov. 1882 (5th), Aug. 1883 (7th), and Nov. 1887 (20th).

TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1903.

PART II.

BOSTON:
PRINTED FOR THE SOCIETY,
1904.

☞ SEE LAST PAGE OF COVER.

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TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, April 4, 1903.

A duly notified stated meeting of the Society was held at eleven o'clock today, the President, O. B. HADWEN, in the chair.

The President reported from the Executive Committee a recommendation for the appropriation of one hundred dollars, to be paid to Aaron Low for services as Chairman of the Committee on Lectures and Publications, and, on motion of Wm. C. Strong, the recommendation was adopted.

The President also reported from the Executive Committee a recommendation that the sum of one hundred dollars be appropriated for prizes to be awarded at the meeting of the Chrysanthemum Society of America on November 10-12 of this year. The prizes to be given to members of the Massachusetts Horticultural Society exhibiting at that meeting. On motion of Mr. Strong the recommendation was adopted.

Mr. Strong spoke of the Biennial Session of the American Pomological Society which is to be held at Horticultural Hall, Boston, September 10-12, 1903, and moved that a committee of five be appointed to make such preparation as may be necessary.

The motion was adopted and the President appointed as the committee, William C. Strong, William H. Spooner, E. W. Wood, William H. Elliott, and John A. Pettigrew.

Under the head of Deferred and New Business, Dr. Henry P. Walcott moved, that the new By-laws which had been proposed at the January meeting be accepted and adopted.

As chairman of the committee on revision of the Constitution and By-laws, he stated that the new By-laws had been twice read at the January meeting, a copy had been mailed to every member of the Society, and, in accordance with the requirement of the present Constitution, had been referred to this meeting for final action.

Mr. Strong inquired if the amendments adopted at the January meeting were carried with the vote of today. The President answered that they were.

The motion of Dr. Walcott was then put and unanimously voted.

Michael H. Norton offered to the Society as a gift from Mrs. Robert M. Bailey of Dedham, granddaughter of General H. A. S. Dearborn, the first President of the Massachusetts Horticultural Society, the manuscript of the address delivered by General Dearborn on the occasion of the first anniversary of the Society, September 19, 1829. It was voted to accept the gift of Mrs. Bailey and to convey to her the thanks of the Society for the interesting relic.

The following named candidates having been duly recommended by the Executive Committee were, on ballot, elected to membership:

SCOTT DOTEN of Jamaica Plain,
MISS MABEL CABOT of Brookline,
EDWARD R. COGSWELL, Jr. of Cambridge.

A communication from Arthur Cowee of Berlin, N. Y. was read, offering as a prize for the best display of Groff's Hybrid gladioli, one hundred of his Gold Medal and Silver Trophy strain varieties. On motion of Mr. Strong it was voted to accept the offer of Mr. Cowee and to refer it to the Committee on Establishing Prizes.

On motion of John Parker it was voted to refer the Dearborn manuscript to the Committee on Publication.

On motion of Mr. Spooner the meeting was dissolved.

WILLIAM P. RICH,
Secretary.

BUSINESS MEETING.

SATURDAY, July 11, 1903.

A duly notified stated meeting of the Society was held at eleven o'clock today, the President, O. B. HADWEN, in the chair.

Kenneth Finlayson, chairman of the committee appointed to prepare a memorial of the late Benjamin Grey, reported as follows:

IN MEMORY OF BENJAMIN GREY.

Benjamin Grey, late of Malden, the well-known florist, nymphæa and orchid grower, died at his home, March 5th, aged fifty-six years and six months. He had been a life member of the Massachusetts Horticultural Society for many years.

He was born at Ayton, Yorkshire, England, August 7th, 1846, and at the age of seven years came with his parents to America, settling for a while in the West. He afterward came East to Farmington, Connecticut, and later with his parents moved to Albany, New York, where his father, the late William Grey, was superintendent of the estate of Hon. Erastus Corning, the owner of one of the best known orchid and plant collections in the country. Here Mr. Grey learned his profession.

At the breaking out of the Rebellion he enlisted in the 177th New York Volunteers and afterward in the 123d Independent Battery, which was later transferred to the 8th Artillery, participating in the noted battles of Cold Harbor, Port Hudson, Spottsylvania, Fall of Richmond, and Lee's Surrender.

Returning home he engaged in his favorite occupation of gardening for several years, part of the time in the employ of Edward S. Rand of Dedham, Massachusetts, owner, as will be remembered by the older members of this Society, of a noted collection of orchids, as well as of other choice plants.

Thereafter Mr. Grey engaged in the business of a florist spending most of his time in Malden, the place of his demise.

To Mr. Grey, more than to anyone else, is due, we believe, the credit of priority for the cultivation of the orchid and nymphæa for commercial purposes in the New England states, if not throughout the country at large; no small testimony to his innate love for the beautiful in floriculture; and to this particular branch of plant life he chiefly confined his energies in late years.

Mr. Grey was a most genial and social person, keen and observant of nature's treasures.

He is survived by his wife, Harriet O. Grey, and three daughters. Two brothers, both gardeners, also survive him, one of them being Robert M. Grey late at the Oakes Ames estate at North Easton, Massachusetts, and until recently a member of the plant committee of this Society.

Resolved, that in the death of Benjamin Grey, the Massachusetts Horticultural Society has lost an esteemed associate, a valued horticulturist, and a staunch defender of his adopted country's honor and dignity.

Resolved, that this memorial be printed in the Transactions of the Society and that a copy be forwarded to his bereaved family.

KENNETH FINLAYSON,
DAVID F. ROY,
PATRICK NORTON. } *Committee.*

On motion of John L. Bird the memorial was accepted and referred to the Committee on Publication.

The President reported from the Executive Committee a recommendation for the appropriation of twenty-five dollars, towards the purchase of an additional card-catalogue case for the library. On motion of William H. Spooner the recommendation was adopted.

The Secretary reported the death of ten members since the last meeting of the Society.

William C. Strong, in referring to the number of deaths, thought it would not be possible nor convenient to appoint a special committee for each one and moved, and it was voted, that the Secretary be appointed necrologist and that he prepare suitable memorials of the deceased members for publication in the Transactions of the Society.

On motion of Mr. Strong the President appointed the following named members a committee to represent the Society at the approaching Biennial Session of the American Pomological Society:

PRESIDENT O. B. HADWEN, *Chairman*,

WILLIAM C. STRONG,	J. K. M. L. FARQUHAR,
WILLIAM H. SPOONER,	JOSEPH H. WOODFORD,
HON. J. R. LEESON,	HENRY W. WILSON,
E. W. WOOD,	JACOB W. MANNING,
GEN'L F. H. APPLETON,	B. M. WATSON,
HON. AARON LOW,	CHARLES W. PARKER,
BENJAMIN P. WARE,	JAMES H. BOWDITCH,
BENJAMIN C. CLARK,	WARREN FENNO,
CHARLES F. CURTIS,	J. WILLARD HILL,
WILLIAM H. ELLIOTT,	GEORGE F. PIERCE,
JOHN L. BIRD,	F. W. DAMON,
HARLAN P. KELSEY,	J. WOODWARD MANNING

A communication from Miss Sarah B. Fay of Woods Hole was read, offering the sum of fifty dollars to be competed for by amateur rose growers at the Rose and Strawberry Exhibition of June 16 and 17. As these prizes were not awarded on the dates mentioned, owing to lack of exhibits, it was moved and voted that the Secretary confer with Miss Fay and ascertain if the offer would continue for another year.

A letter from Robert Farquhar was read, containing his resignation as a member of the Committee of Arrangements and it was voted to accept the resignation.

A letter of acknowledgment from Fred L. Harris was read, conveying to the Society his thanks for the copy of the memorial adopted in memory of his father, the late Frederick L. Harris.

The following named persons having been duly recommended by the Executive Committee were, on ballot, elected to membership:

BENJAMIN C. MARBLE of Manchester-by-Sea,
JOHN LOWELL of Newton,
CYRUS ALGER HAWES of Boston,
JAMES A. LOWELL of Chestnut Hill.

On motion of Mr. Spooner it was voted that the meeting be dissolved.

WILLIAM P. RICH,
Secretary.

BUSINESS MEETING.

SATURDAY, October 3, 1903.

A duly notified stated meeting of the Society (the last under the Constitution and By-laws of 1895) was held at eleven o'clock today, the President, O. B. HADWEN, in the chair.

On the recommendation of the Executive Committee an appropriation of one hundred dollars was voted in payment for the decoration of the halls with plants and flowers on the occasion of the recent Biennial Session of the American Pomological Society.

On motion of William H. Spooner the thanks of the Society were voted to Robert Farquhar in recognition of his services as a member of the Committee of Arrangements.

A communication from William N. Craig, head gardener to Miss Mary S. Ames of North Easton, Massachusetts, was read, offering as a gift to the Society, six large palms of several varieties which would be useful for decorative purposes in the exhibition halls.

On motion of William C. Strong it was voted to accept the gift of Miss Ames, and that the thanks of the Society be conveyed to her, and also to Mr. Craig for his interest in the matter.

Joseph S. Chase offered the following motion:

In consideration of the value of the Foster peach, originated by Joshua T. Foster, late a member of this Society, and in recognition of his valuable service in the interests of pomology, it is hereby voted that a silver-gilt medal of the Society, suitably inscribed, be presented to the family of Mr. Foster.

Mr. Chase, in support of his motion, called attention to the fact that this peach which was frequently shown at the exhibitions of the Society twenty-five to thirty years ago and awarded numerous prizes for its excellence, was still favorably known. He thought as a matter of justice to the memory of Mr. Foster, who has now passed away, that a medal of the Society should be voted.

Mr. Strong seconded the motion, if a medal had not been awarded previously.

E. W. Wood remarked that the Foster peach was today well and favorably known to fruit growers.

The Secretary referred to several of the reports of the Fruit Committee from 1865 to 1879 in which the Foster peach was highly praised.

The motion of Mr. Chase was unanimously voted.

The following named persons having been duly recommended by the Executive Committee were, on ballot, elected to membership:

ROBERT JOHNSTON of Lexington,
STEPHEN CHILD of Auburndale.

The meeting was then dissolved.

WILLIAM P. RICH,
Secretary.

BUSINESS MEETING.

SATURDAY, November 14, 1903.

In accordance with the requirement of the Preliminary Section of the By-laws adopted April 4, 1903, the annual meeting of the Massachusetts Horticultural Society for the year 1903 was held today at Horticultural Hall, the President, O. B. HADWEN, in the chair.

The meeting was called for the election of officers for the ensuing year and for the transaction of such other business as might legally be presented; and a printed notice of the meeting had been mailed to the address of every member of the Society as it appeared upon the records of the Secretary.

The Executive Committee reported a recommendation that the following amounts be appropriated for prizes, gratuities, and lectures for the year 1904:

For Plants	$1,500.00
" Flowers	1,875.00
" Native Plants	125.00

For Fruits	$1,275.00
" Vegetables	900.00
" Gardens and Greenhouses . . .	375.00
" Lectures	200.00

On motion of Michael Sullivan these appropriations were unanimously voted.

A communication from Kenneth Finlayson was received, resigning the chairmanship of the Committee on Flowers, to date back to August 8, and, on motion of William H. Spooner, the resignation was accepted and the thanks of the Society were voted to Mr. Finlayson for his services on the committee.

On motion of Patrick Norton it was voted that Julius Heurlin be appointed chairman of the Committee on Flowers for the remainder of the year from August 8.

On motion of Mr. Norton it was voted that all reports of officers and standing committees for the current year be referred for acceptance to the Committee on Publication with the exception of the report of the Treasurer which was referred to the Finance Committee.

On motion of Mr. Spooner a recess until ten minutes of twelve was voted and at that time the President again called the meeting to order and announced that the next business was the choosing of officers for the year 1904.

He appointed as a committee to receive, assort, and count the votes, J. Allen Crosby, Patrick Norton, and William P. Rich.

The polls were declared open at twelve o'clock, noon, and the ballots were prepared in accordance with the Australian system. The President, being obliged to leave, called Edward B. Wilder to preside during the remainder of the meeting. At four o'clock P. M. the President *pro tempore* declared the polls closed and the committee on balloting presented a report of which the following is a copy.

"The members of the Society, qualified to vote at its meetings, assembled at Horticultural Hall on Saturday, November 14, 1903, at a meeting duly called as provided for in the By-laws. The following persons were present and served as a committee to receive, assort, and count the ballots: J. Allen Crosby, Patrick Norton, William P. Rich."

The polls were opened at twelve o'clock, noon, and closed at four o'clock in the afternoon. The ballots having been sorted and counted by the committee, the result was as follows:

For President.

HENRY P. WALCOTT, M. D.

For Vice-Presidents.

WALTER HUNNEWELL, (For two years).
WARREN W. RAWSON, (For one year).

For Treasurer.

CHARLES E. RICHARDSON.

For Secretary.

WILLIAM P. RICH.

For Trustees (for three years).

WILLIAM N. CRAIG,
J. K. M. L. FARQUHAR,
ARTHUR D. HILL,
CHARLES S. SARGENT.

For Trustees (for two years).

OAKES AMES,
ARTHUR H. FEWKES,
CHARLES W. PARKER,
WILLIAM H. SPOONER.

For Trustees (for one year).

ARTHUR F. ESTABROOK,
ROBERT T. JACKSON,
JOHN A. PETTIGREW,
MICHAEL SULLIVAN.

For Nominating Committee.

WALTER C. BAYLIES,
WILLIAM H. ELLIOTT,
NATHANIEL T. KIDDER,
RICHARD M. SALTONSTALL,
C. MINOT WELD.

Whole number of ballots cast 55.

J. ALLEN CROSBY,
PATRICK NORTON,
WM. P. RICH.
Committee.

The presiding officer, Mr. Wilder, declared the list as presented by the ballot committee to be the duly elected officers of the Society for the year 1904 and the meeting was dissolved.

WILLIAM P. RICH,
Secretary.

REPORT

OF THE

COMMITTEE ON PLANTS

FOR THE YEAR 1903.

By ARTHUR H. FEWKES, CHAIRMAN.[1]

A review of the work of this department for the year shows that but few exhibits out of the ordinary have been made although as a whole they have been of excellent quality. While last year was a phenomenal one in the way of new introductions the present has been nearly the reverse, and we have only a few new things to record. A detailed description of these follows.

On January 3 George McWilliam was awarded a First Class Certificate of Merit for a fine seedling, hybrid *Cypripedium*, "Hildegarde Lasell," the result of a cross between *Cypripedium* × *Schlessingerianum* var. "W. W. Lunt" and *Cypripedium* × *Leeanum*. On the next Saturday he showed another fine hybrid, "Marion Lasell," for which he received the same award, a First Class Certificate of Merit. The seed parent was the same as the foregoing, but *Cypripedium Spicerianum* was used for the pollen parent instead of *Cypripedium* × *Leeanum*.

[1] CORRECTION. In the report of the Committee on Plants in the TRANSACTIONS for 1902-II an error occurred in printing portions of lines 32 to 34, page 146, which should read: Its seed parent was the same as the Farquhar rose but the Hybrid Perpetual variety, Mme. Gabrielle Luizet, was used as pollen parent.—*Ed.*

The same day Mr. McWilliam exhibited a form of *Cypripedium* × *Leeanum* which was very interesting from the fact that it was the result of a cross between *Cypripedium Spicerianum* and *Cypripedium insigne* var. *Sanderæ*, the latter having been used with the supposition that its decided yellow color would be imparted to the progeny, but hardly a trace of yellow was apparent, the flowers being inferior to those produced where the ordinary form of *insigne* was used for pollen parent, as was proven by several cut flowers which were shown at the same time for comparison. The plant from which these latter were cut was shown on the next Saturday, January 17, and a Society's Silver Medal was awarded for it. The variety is named "G. M. Whitin," and is very distinct in color, the standard being nearly pure white, while the other parts are quite a decided yellow.

On February 7 J. E. Rothwell showed a hybrid lælia, *Lælia* × *Yula*, (*L. purpurata* × *L. cinnabarina*). This is the brightest of the *cinnabarina* crosses that have come under our notice and we awarded the Society's Silver Medal for this. He also showed a fine new seedling, *Cypripedium* × *nanum* var. "Zenobia," (*C.* × *Leeanum* × *C.* × *Lathomianum*) for which he received the Society's Bronze Medal.

March 7 Walter P. Winsor showed two fine new hybrid dendrobiums, *Dendrobium* × *Rolfeæ*, (*D. nobile* × *D. primulinum*), and *Dendrobium* × *Wigamiæ*, (*D. signatum* × *D. nobile*). The former is in the way of *D. nobile* but exceedingly delicate in coloring and the latter has the habit of *D. nobile* but more slender, while the flowers are creamy white in color with a crimson throat. A First Class Certificate of Merit was awarded to each of them.

At the Spring Show, March 18, Henry A. Dreer, Inc. exhibited their new golden pandanus, *Pandanus Sanderi* for which they received the Society's Silver Gilt Medal. This variety seems to be much stronger in habit than the old *P. Veitchii*, but it is questionable whether it is any more beautiful than the latter when well grown. The delicate cream white of the *Veitchii* is replaced by a rich golden shade in the *Sanderi*, but the variegation seems

less pronounced in the new variety and shades more into the natural green of the leaf.

Honorable Mention was awarded Walter P. Winsor for a variety of *Adiantum cuneatum* of remarkable size of frond and form of pinnules.

A First Class Certificate of Merit was awarded Wm. Thatcher for a seedling asparagus without name which is of beautiful drooping habit, in the way of *A. decumbens*, and of a bluish-green color.

M. H. Walsh exhibited a seedling hybrid rose of much promise. It is of the rambler type and is a cross between Crimson Rambler and Paul's Carmine Pillar. The plant exhibited was two years old from the seed and showed great vigor, the foliage being a bright, glossy green, and the single flowers are a fine carmine-red color with lighter center. The variety is named Hiawatha, and a First Class Certificate of Merit was awarded Mr. Walsh for it.

Bancroft Winsor was awarded Honorable Mention for Sutton's fine new cyclamen, Sutton's Salmon Pink.

April 4 Mr. Walsh again exhibited the same plant of his new seedling rose, Hiawatha, that he had on exhibition at the Spring Show. It was in fine condition and remarkably full of flowers.

He also showed another seedling rambler rose named Minnehaha, a cross between *Rosa Wichuraiana* and Paul Neyron. The flowers are full double, deep rose-pink in color, darker than the Farquhar rose or Dorothy Perkins. This seems to be a very promising pillar rose with fine foliage and great freedom of bloom, impressing us as worthy of the Society's Silver Medal which was awarded.

May 9 J. E. Rothwell was awarded a First Class Certificate of Merit for an interesting seedling orchid, *Lælia cinnabarina* × *Cattleya Percivaliana* and again the same award on June 6 for a seedling orchid *Lælia* × *Ragotiana*, (*L. grandis* × *L. cinnabarina*). This same day David F. Roy exhibited his seedling canna, Mrs. E. S. Converse, the same variety that was shown by him last year and received Honorable Mention. It is deep red in color and remarkably dwarf and floriferous in habit, and appeared so much better this season than last that we considered it worthy of a First Class Certificate of Merit which was accordingly awarded.

August 1 Oakes Ames exhibited a fine new seedling cypripedium, *C.* × *Chamberlaino-Rothschildianum* for which he was awarded the Society's Silver Medal.

At the Annual Show, September 24, Henry A. Dreer, Inc. was awarded Honorable Mention for two new plants, *Pennisetum macrophyllum atrosanguineum* and *Asparagus myriocladus*. The former although not a hardy plant is one of the most distinct of grasses and its purplish-red foliage should make it a welcome addition to the ornamental varieties. The asparagus is a plant of much promise, but owing to the limited exhibit the committee did not feel justified in giving a higher award at this time and would urge a further display, as there seems to be a question of freedom in growth, which is a prerequisite of commercial value.

J. E. Rothwell brought to the Chrysanthemum Show two fine seedling orchids, one, *Lælia tenebrosa* × *Cattleya Gaskelliana*, resembles its seed parent in form of flower but with the large size of the pollen parent. The color is a clear deep rosy-lilac throughout except the lip which is blotched with a deeper shade. This received a First Class Certificate of Merit. The other, *Lælio-Cattleya Bowring-Clive*, was one of the most remarkable seedlings ever shown before us, and was the result of a cross between *Cattleya Bowringiana* and *Lælio-Cattleya Clive*. The flower is of medium size, of the lælia type, of a clear rosy-lilac in color, with the lip and throat very deep maroon-crimson, prominently marked with a peculiar, crosswise blotch of light yellow, making a most beautiful and unique flower, worthy of the award given it: the Society's Silver Gilt Medal.

On November 14 Mr. Rothwell received a First Class Certificate of Merit for *Lælio-Cattleya Pallas*, (*L. cripsa* × *C. Dowiana aurea*). The flowers are of good size with delicate lavender sepals and petals, the lip rich crimson-purple bordered with white. A marked peculiarity in the specimen exhibited was the diversity of markings of the throat in different flowers. In some it was simply blotched with yellow while in others it was shaded and veined.

Beside the special awards for new plants we have made several others for meritorious displays and for superior cultivation.

In the former class we awarded Lager & Hurrell on March 18 a Silver Gilt Medal for a very extensive and beautiful display of orchids, and on November 5 Mrs. John L. Gardner Honorable Mention for a plant of the yellow-flowered solandra, *Solandra lævis*.

For superior cultivation our first award, a Silver Medal, was made to George Melvin, gardener to Col. Charles Pfaff, who showed on January 31 a fine specimen of *Oncidium unguiculatum* carrying two magnificent spikes of bloom five feet in length. He was also awarded on April 11 a Silver Medal for a remarkably well grown plant of *Dendrobium fimbriatum oculatum*, and on October 3 a First Class Certificate of Merit for a plant of *Miltonia candida* carrying forty flowers.

March 7 Peter Murray, gardener to Walter P. Winsor, was awarded the Society's Bronze Medal for a finely grown plant of *Odontoglossum Rossii majus* and on May 23 he was awarded the Silver Medal for a plant of *Cœloggne Dayana* with eleven spikes and about four hundred blooms. The plant had been under his care for about five years and had steadily improved from year to year.

March 18 James Stuart, the grower of the magnificent plants of *Cyclamen Persicum* exhibited by George F. Fabyan, was awarded a Society's Silver Medal.

One other exhibit which we deemed worthy of a special cultural award, the Society's Bronze Medal, was made at the Annua Show, September 24, by Mrs. M. L. Atwood of Bridgewater, Massachusetts. Her display consisted of achimenes grown in the window of her own home and while there was but one variety represented, the exhibit was instructive and served to illustrate the adaptability of this plant for window cultivation.

In reviewing the exhibitions of the year several displays should receive special notice as being of unusual character or excellence. In this connection we would speak of the display made by R. & J. Farquhar & Co. of the Farquhar rose at the Spring Show, March 18. A few plants were shown a year ago and it seemed of such unusual merit that a high award was made it. Their exhibit at this show fully justified the award then made and showed the

remarkable vigor of the variety in a marked manner. In scarcely eighteen months from the time the original plant was purchased they had been able to propagate thousands of small plants beside growing a sufficient number of large ones for this exhibit which were arranged as a decoration for the rear end of the hall and made a complete screen. The older plants beside making a vigorous growth had also produced many flowers, but the younger bore only a few. Evidently the greatest value in this rose lies in its wonderful vigor and its adaptability for covering purposes, for many of the plants shown had made shoots fully twenty feet in length with bright, glossy leaves.

The displays of cyclamens at this same show should also be mentioned, for in many ways they excelled any previous exhibits we have been called upon to examine. We refer particularly to the plants shown by George F. Fabyan and Jason S. Bailey, those of the former being particularly meritorious.

At the Annual Exhibition, September 24-27, the Yamanaka Company made a display of dwarfed trees and miniature gardens. The trees though few in number were exceedingly interesting from their great age, large size, and careful training. The two largest of the group were a pair of retinisporas, (*Retinispora obtusa nana*) and were claimed to be between four and five hundred years old. Considering the extreme slowness of growth peculiar to this variety under the most favorable conditions, the claim can hardly be doubted for the trees were about five feet in height and nearly as broad. The Society's Silver Gilt Medal was awarded for this display.

The crotons were another prominent feature, particularly the large specimens from Mrs. J. W. Tufts.

One of the most interesting displays came from the Harvard Botanic Garden and included many curious species as well as beautiful specimens. Among them we noted a fine collection of nepenthes and as these interesting plants have not been shown at our Annual Exhibition for several years it was gratifying to have them again exhibited.

The displays of orchids were not up to their usual mark, Messrs. Lager & Hurrell furnishing the only exhibit.

At the Chrysanthemum Show the large specimen plants were, as usual, the center of interest and the plants from Herbert Dumaresq, J. S. Bailey, E. S. Converse, E. W. Converse, and E. A. Clark have been seldom, if ever, excelled.

Your committee feels that our chrysanthemum shows are lacking in variety and would call attention to the sameness which seems to characterize them. Some effort should be made to introduce new features, in connection with the old, which will make them more attractive and instructive.

The chrysanthemum is a plant with which an endless variety of artistic decorative effects can be produced and it is in this direction, it seems to us, that a remedy can be found.

July 8, on invitation from J. Tailby & Son, the committee visited their grounds at Wellesley to inspect, as it grows in the field, their hybrid calla, Mrs. Theodore Roosevelt, for which an award was made them last season. We found it growing vigorously, in large numbers, and holding true to the characteristics of the plants shown before us last year, and we feel that the plant is fully worthy of the award made at that time.

For the prizes offered by the Society of American Florists and Ornamental Horticulturists there have been three entries; one by J. Tailby & Son, hybrid calla, Mrs. Theodore Roosevelt; another by D. F. Roy, seedling canna, Mrs. E. S. Converse; and another by Col. Charles Pfaff, seedling pelargonium, Mrs. Charles Pfaff.

We have awarded the first prize, a Silver Medal, to J. Tailby & Son for their hybrid calla, and the second prize, a Bronze Medal, to D. F. Roy for his seedling canna.

We will close our report with a word in appreciation of the displays of large bays, palms, and other decorative plants contributed to all but the last of our large exhibitions by R. & J. Farquhar & Co. These plants were not only fine specimens individually but have been of great value in decorating the hall; their value for this purpose was most keenly felt at the Chrysanthemum Show when we were without them and emphasized the necessity of offering prizes for classes which will fill this want.

We have awarded during the year in prizes and money gratuities		$1,340.00
Four Silver Gilt Medals	@ $10.00	40.00
Eight Silver "	" 5.00	40.00
Three Bronze "	" 3.00	9.00
Estimated cost of lettering and cases for fifteen Medals	" 2.25	33.75
		$1,462.75
Appropriation for plants for 1903		$1,500 00
Amount awarded as above		1.462.75
Unexpended balance		$37.25

We have also awarded thirteen First Class Certificates of Merit and five Honorable Mentions.

PRIZES AND GRATUITIES AWARDED FOR PLANTS.

1903.

JANUARY 3.

PRIMULA SINENSIS.—Six plants in not less than six-inch pots:
1st, Mrs. John L. Gardner, $4.

PRIMULA STELLATA.—Six plants in not less than six-inch pots:
1st, Mrs. John L. Gardner, $4.

PRIMULA OBCONICA HYBRIDS.—Six plants in not less than six-inch pots:
2nd, Mrs. John L. Gardner, $3.

Gratuity:—

Mrs. John L. Gardner, *Euphorbia Jacquiniæflora* and *Primula Sinensis alba plena*, $2.

FEBRUARY 7.

FREESIAS.—Six pots or pans:
1st, Col. Chas. Pfaff, $5.

Gratuities:—

Edward J. Mitton, Display of *Primula Sinensis*, $2.
J. E. Rothwell, Display of Orchids, $5.

MARCH 7

Gratuity: —

Walter P. Winsor, *Odontoglossum triumphans*, $2.

SPRING EXHIBITION.

MARCH 18, 19, 20, 21, 22.

Theodore Lyman Fund.

INDIAN AZALEAS.—Specimen plant, named:
1st, E. W. Breed, $8; 2nd, Wm. S. Ewell & Son, $6.

Society's Prizes.

ORCHID.— Single plant:
1st, Jason S. Bailey, $10; 2nd, Walter P. Winsor, $6.

STOVE OR GREENHOUSE PLANTS.—Specimen in bloom other than Azalea or Orchid:
1st, Mrs. John L. Gardner, $8.

HARDY POLYANTHUSES.— Twelve plants of distinct varieties:
1st, W. Whitman, $6; 2nd, Mrs. John L. Gardner, $4.

CYCLAMENS.— Ten plants:
1st, Geo. F. Fabyan, $15; 2nd, Geo. F. Fabyan, $12; 3d, Jason S. Bailey, $10.

Ten plants in not over seven-inch pots:
1st, Jason S. Bailey, $8; 2nd, Geo. F. Fabyan, $6; 3d, Jason S. Bailey, $4.

Single plant:
1st, Geo. F. Fabyan, $5; 2nd, Geo. F. Fabyan, $4.

CINERARIAS.— Six varieties:
1st, Geo. F. Fabyan, $10; 2nd, Mrs. John L. Gardner, $8; 3d, Edward J. Mitton, $6.

Three varieties:
1st, Geo. F. Fabyan, $6; 2nd, Mrs. John L. Gardner, $5; 3d, Edward J. Mitton, $4.

Single plant:
1st, Mrs. John L. Gardner, $3; 2nd, Geo. F. Fabyan, $2.

HYACINTHS.— Twelve named varieties, in pots, one in each pot:
1st, Mrs. John L. Gardner, $8; 2nd, Mrs. John L. Gardner, $5.

Six named varieties, in pots, one in each pot:
1st, Mrs. John L. Gardner, $5; 2nd, Mrs. John L. Gardner, $4.

Single named bulb, in pot:
1st, Mrs. John L. Gardner, $2; 2nd, Mrs. John L. Gardner, $1.
Three pans, not to exceed twelve inches, ten bulbs of one variety in each pan:
1st, Mrs. John L. Gardner, $6.
Two pans, not to exceed twelve inches, ten bulbs of one variety in each pan:
1st, Mrs. John L. Gardner, $4.
Single pan, not to exceed twelve inches, with ten bulbs of one variety:
1st, Mrs. John L. Gardner, $3; 2nd, Mrs. John L. Gardner, $2; 3d, Bussey Institution, $1.

TULIPS.— Six eight-inch pans, nine bulbs of one variety in each:
1st, Wm. S. Ewell & Son, $6; 2nd, Bussey Institution, $4; 3d, Wm. S. Ewell & Son, $2.
Three eight-inch pans, nine bulbs of one variety in each:
1st, Bussey Institution, $3; 2nd, Wm. S. Ewell & Son, $2; 3d, Wm. S. Ewell & Son, $1.
Three ten-inch pans, twelve bulbs of one variety in each:
1st, Wm. S. Ewell & Son, $5; 2nd, Bussey Institution, $4; 3d, Wm. S. Ewell & Son, $3.

POLYANTHUS NARCISSUS.— Four seven-inch pots, four bulbs in each, distinct varieties:
2nd, Bussey Institution, $3.

JONQUILS.— Six pots or pans, not exceeding eight inches, the number of bulbs in each to be at the discretion of the grower:
1st, Wm. Whitman, $4; 2nd, Bussey Institution, $3.

NARCISSUSES.— Six eight-inch pans, distinct varieties, single or double:
1st, Wm. S. Ewell & Son, $6; 2nd, Bussey Institution, $4.
Three eight-inch pans:
1st, Wm. S. Ewell & Son, $3; 2nd, Bussey Institution, $2.

LILY OF THE VALLEY.— Six pots or pans, not exceeding eight inches:
1st, Bussey Institution, $4.

CROCUSES.— Three boxes, each eight by twelve inches, three distinct varieties:
1st, Bussey Institution, $3; 2nd, Bussey Institution, $2.

ROMAN HYACINTHS — Six eight-inch pans, ten bulbs in a pan:
1st, Wm. S. Ewell & Son, $4; 2nd, Bussey Institution, $2.

GENERAL DISPLAY OF SPRING BULBS AND PLANTS.— All classes:
1st, Wm. S. Ewell & Son, $30; 2nd, Bussey Institution, $20.

Gratuities:—

James L. Little, *Azalea mollis* and Freesias, $5.
Walter Hunnewell, *Aculba Japonica* in fruit, and ferns, $10.
Mrs. Quincy A. Shaw, *Crinum Macowani*, $3.

Mrs. A. W. Blake, Group of Amaryllis, $6.
Bussey Institution, Forced Shrubs, $6.
R. & J. Farquhar & Co., display of the Farquhar Rose, $35.
Jason S. Bailey, display of Cinerarias, Cyclamens, Azaleas, and Palms, $18.
Bussey Institution, display of native plants, forced, $15.

MAY 9.

INDIAN AZALEAS.— Six plants in pots, named:
2nd, Mrs. A. W. Blake, $8.
Single specimen:
1st, Mrs. A. W. Blake, $4.
CALCEOLARIAS.— Six varieties, in pots:
1st, Geo. F. Fabyan, $10.
Single plant:
1st, Geo. F. Fabyan, $3; 2nd, Geo. F. Fabyan, $2.
PELARGONIUMS.— Six named Show or Fancy varieties, in not less than eight-inch pots, in bloom:
1st, Edward J. Mitton, $10.

Gratuities: —

James L. Little, Display of Amaryllis and Streptocarpus, $8.
J. E. Rothwell, Display of Orchids, $15.
Mrs. A. W. Blake, Display of *Clerodendron Thompsonæ*, $5.

MAY 23.

Gratuity: —

I. E. Coburn, Display of *Trollius Europæus*, $3.

RHODODENDRON EXHIBITION.

JUNE 6. (*Changed from June 5, 6, 7*).

ORCHIDS.— Display, arranged for effect, with foliage plants, in a space eight feet by five feet:
1st, J. E. Rothwell, $25.

Gratuities: —

Mrs. John L. Gardner, *Cypripedium Parishii*, $1.
Lager & Hurrell, Display of Orchids, $15.
Mrs. A. W. Blake, Display of plants, $7.

JUNE 16.

Gratuities: —

Mrs. John L. Gardner, Display of Gloxinias, $10.
Col. Chas. Pfaff, *Odontoglossum læve*, $2.
W. A. Manda, Inc. Display of Orchids, $15.

SEPTEMBER 12.

Gratuity: —

Col. Chas. Pfaff, *Oncidium incurvum*, $3.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 24, 25, 26, 27. (*Changed from Sept. 10, 11, 12, 13*).

PALMS.— Pair, in pots or tubs not less than eighteen inches in diameter:
1st, Jason S. Bailey, $12.
Pair, in pots not more than fourteen inches in diameter:
1st, Jason S. Bailey, $8; 2nd, A. F. Estabrook, $6.

GREENHOUSE PLANTS.— Best furnished group containing foliage plants of all descriptions, arranged for effect, covering two hundred square feet:
1st, Jason S. Bailey, $50; 2nd, E. S. Converse, $35.
Six Greenhouse or Stove plants, decorative specimens of different named varieties, two Crotons admissible:
1st, Jason S. Bailey, $20.

CENTER PIECE FOR TABLE.— For fifteen covers, living plants, in one receptacle, only one entry admissible:
1st, J. E. Rothwell, $10; 2nd, Edward J. Mitton, $8; 3d, Mrs. E. M. Gill, $6.

FLOWERING GREENHOUSE PLANT.— Single specimen, named:
1st, Jason S. Bailey, $8; 2nd, Mrs. John L. Gardner, $6.

CALADIUMS.— Six named varieties:
2nd, A. F. Estabrook, $6.

FERNS.— Five named varieties, no Adiantums admissible:
1st, Jason S. Bailey, $10; 2nd, A. F. Estabrook, $8.
Specimen other than Tree Fern:
1st, Jason S. Bailey, $4; 2nd, A. F. Estabrook, $3.

ADIANTUMS.— Five named varieties:
1st, A. F. Estabrook, $8.

DRACÆNAS.— Six named varieties:
1st, Jason S. Bailey, $8; 2nd, E. S. Converse, $5.

CROTONS.— Twenty-five plants, not less than eighteen named varieties, in not less than six-inch pots:
1st, Edward J. Mitton, $12; 2nd, Jason S. Bailey, $10.
Six named varieties, in not less than eight-inch pots:
1st, Mrs. J. W. Tufts, $10.
BEGONIA REX.— Ten pots of ten varieties:
1st, E. S. Converse, $10.
OUVIRANDRA FENESTRALIS.—
1st. E. S. Converse, $6; 2nd, Mrs. John L. Gardner, $4.

Gratuities: —

R. & J. Farquhar & Co., Collection of Palms and Bays, $15.
J. E. Rothwell, *Cœlogyne Massangeana*, $1.
Edward J. Mitton, Display of Orchids, $8.
Lager & Hurrell, " " " $10.
Wm. B. Roberts, Coleus and Begonia Rex, $4.
Mrs. J. W. Tufts, Crotons, $4.
Mrs. John L. Gardner, Display of plants, $25.
Botanic Garden, Group of plants, $35.
Botanic Garden, Nepenthes, $5.
E. S. Converse, Display of Crotons, Ferns, and Begonias, $7.
Mrs. John L. Gardner, *Asparagus deflexus*, $1.
Mrs. John L. Gardner, *Gonioplebium subauriculatum*, $1.
L. H. Foster, Display of Nephrolepis "Anna Foster," $5.
M. Dinsmore, House grown Begonias, $3.

CHRYSANTHEMUM SHOW.

NOVEMBER 5, 6, 7, 8.

Henry A. Gane, Memorial Fund.

CHRYSANTHEMUMS.— For the best specimen plant of Mrs. Jerome Jones, or any of the sports thereof:
1st, Jason S. Bailey, $5.
For the best specimen plant of Marcia Jones, or any of the sports thereof:
1st, E. S. Converse, $5.

Society's Prizes.

Display of eight named plants, any or all classes, distinct varieties:
1st, Herbert Dumaresq, $60; 2nd, Jason S. Bailey, $45; 3d, E. S. Converse, $35.
Display of ten named plants, any or all classes, distinct varieties, in not exceeding nine-inch pots of ordinary form:
1st, E. S. Converse, $35.

Three Japanese Incurved:
1st, E. W. Converse, $12; 2nd, E. A. Clark, $10.
Three Reflexed, distinct named varieties:
1st, Jason S. Bailey, $12; 2nd, E. A. Clark, $10.
Specimen Japanese Incurved, named variety:
1st, Herbert Dumaresq, $6; 2nd, Jason S. Bailey, $5.
Specimen Reflexed, named variety:
1st, E. S. Converse, $6; 2nd, Herbert Dumaresq, $5.
Specimen Anemone Flowered, named variety:
1st, E. S. Converse, $6; 2nd, Herbert Dumaresq, $5.
Specimen Pompon, named variety:
1st, Herbert Dumaresq, $4; 2nd, E. A. Clark, $3.
Twelve plants, of twelve different varieties, grown to one stem and bloom, in not over six-inch pots, preference being given to plants not more than three feet in height:
1st, E. S. Converse, $8; 2nd, James Nicol, $6; 3d, E. S. Converse, $4.
Six plants grown as above but all of one color, Red:
1st, E. S. Converse, $4; 2nd, James Nicol, $3.
White:
1st, James Nicol, $4; 2nd, James Nicol, $3.
Pink:
1st, E. S. Converse, $4; 2nd, James Nicol, $3.
Yellow:
1st, James Nicol, $4; 2nd, E. S. Converse, $3.
Any other color:
1st, James Nicol, $4; 2nd, E. S. Converse, $3.
Group of Chrysanthemums, arranged for effect, with palms and decorative foliage plants, limited to one hundred square feet:
1st, Mrs. John L. Gardner, $25.

Gratuities:—

Mrs. Geo. S. Harwood, Standard Chrysanthemums, $6.
E. S. Converse, Chrysanthemums, $5.
Lager & Hurrell, Display of Orchids, $15.
R. & J. Farquhar & Co., Display *Begonia Gloire de Lorraine*, $10.
E. W. Converse, Chrysanthemums, $5.
L. H. Foster, Display of Nephrolepis, "Anna Foster," $5.

SOCIETY'S SILVER GILT MEDALS.

Spring Exhibition, March 18-22. Henry A. Dreer, for *Pandanus Sanderi*.
Spring Exhibition, Lager & Hurrell, for Display of Orchids.
Annual Exhibition, September 24–27. Yamanaka Co., for Dwarfed Trees and Miniature Gardens.
Chrysanthemum Show, November 5-8. J. E. Rothwell, for *Lælio-Cattleya Bowring-Clive*.

SOCIETY'S SILVER MEDALS.

January 17. Geo. McWilliam, for *Cypripedium* × *Leeanum* var. G. M. Whitin.

" 31. George Melvin, for Superior Cultivation of *Oncidium unguiculatum*.

February 7. J. E. Rothwell, for *Lælia* × *Yula*.

Spring Exhibition, March 18-22, James Stuart, for Superior Cultivation of *Cyclamen Persicum*.

April 4. M. H. Walsh, for Seedling Rambler Rose, Minnehaha.

" 11. Geo. Melvin, for Superior Cultivation of *Dendrobium fimbriatum oculatum*.

May 23. Peter Murray, for Superior Cultivation of *Cœlogyne Dayana*.

August 1. Oakes Ames, for Seedling Cypripedium, *C.* × *Chamberlaino-Rothschildianum*.

SOCIETY'S BRONZE MEDALS.

February 7. J. E. Rothwell, for Seedling *Cypripedium* × *nanum* var. *Zenobia*.

March 7. Peter Murray, for Superior Cultivation of *Odontoglossum Rossii majus*.

Annual Exhibition, September 24-27. Mrs. M. L. Atwood, for Window Cultivation of Achimenes.

FIRST CLASS CERTIFICATES OF MERIT.

January 3. George McWilliam, for Cypripedium × Hildegarde Lasell.

" 10. George McWilliam, for " × Marion Lasell.

February 7. Henry T. Clinkaberry, for Cattleya × Mrs. Theodore Roosevelt.

March 7. Walter P. Winsor, for Dendrobium × *Rolfeæ*.

" 7. Walter P. Winsor, " " × *Wiganiæ*.

Spring Exhibition, March 18-22. Wm. Thatcher, for Seedling Asparagus.

" " " " M. H. Walsh, for Seedling Rambler Rose, Hiawatha.

May 9. J. E. Rothwell, for Seedling Orchid, *Lælio-Cattleya*.

June 6. J E. Rothwell, for " " *Lælia* × *Ragotiana*.

" 6. David F. Roy, for " Canna, Mrs. E. S Converse.

October 3. George Melvin, for Superior Cultivation of *Miltonia candida*.

Chrysanthemum Show, November 5-8. J. E. Rothwell, for Seedling Orchid *Lælia tenebrosa*.

November 14. J. E. Rothwell, for *Lælio-Cattleya Pallas* × *Cattleya Gaskelliana*.

HONORABLE MENTION.

Spring Exhibition, March 18-22. Walter P. Winsor, for *Adiantum cuneatum* var.

Annual Exhibition, September 24-27. Henry A. Dreer, Inc., for *Pennisetum macrophyllum atrosanguineum*.

Annual Exhibition, September 24-27. Henry A. Dreer, Inc., for *Asparagus myriocladus*.

Chrysanthemum Show, November 5-8. Mrs. John L. Gardner, for *Solandra lævis*.

ARTHUR H. FEWKES,
JAMES WHEELER,
DAVID F. ROY,
ROBERT CAMERON,
ROBERT M. GREY.

Committee on Plants.

REPORT

OF THE

COMMITTEE ON FLOWERS

FOR THE YEAR 1903.

By KENNETH FINLAYSON, CHAIRMAN to August 8, and JULIUS HEURLIN, CHAIRMAN from August 9 to December 31.[1]

MR. FINLAYSON'S REPORT.

Your committee desires to report that although the past season has been unusually dry and somewhat warm in the early part of the summer, followed by unseasonable, cold, and rainy weather, yet, on the whole, commendable effort and enthusiasm have been displayed at the various exhibitions in friendly rivalry in the prize arena.

This in a measure offset the bad effect of the weather and established conclusively the fact that the old spirit of healthy competition is still abroad in the community of floriculturists at least.

The exhibition most affected by the weather conditions was the Rose Show; practically none of the local rose growers participated in it. Had it not been for the large and meritorious display of Miss Sarah B. Fay of Woods Hole, the show, as far as roses were concerned, would have been practically nothing. The manager, M. H. Walsh, at this and the following Saturday exhibitions sustained his wonted reputation as an expert rosarian. At the June show, Miss Fay was awarded a Silver Medal for the new hybrid-perpetual rose, *Soleil d'Or*.

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[1] On account of ill-health Mr. Finlayson was obliged to resign the chairmanship of the committee on August 8 and was succeeded by Mr. Heurlin for the remainder of the year.

On Saturday, February 7, there were two fine, competitive exhibits of orchids entered for No. 11 of the Schedule, and calling for a display of named species and varieties filling not less than twenty bottles.

The first prize, a Silver Gilt Medal, went to Col. Charles Pfaff of South Framingham for an elegant display, splendidly staged, and showing the height of cultural skill; his *Lælia autumnalis* variety being marvellously well done, as well as the cattleyas, oncidiums, dendrobiums, and others.

The second prize, a Silver Medal, was won by J. E. Rothwell of Brookline for a grand collection, mostly consisting of varieties of cypripediums; out of eighty-seven bottles, sixty-one being of this genus. This large proportion of the lady's slipper flower in the display, though of unquestioned merit, militated against the otherwise fine stand.

There was one superb spike of *Phalænopsis grandiflora* in Mr. Rothwell's exhibit which was, doubtless, the best spike of this particular variety ever shown in Boston.

The Spring Exhibition, held March 18 to 22, was notable in some exhibits; particularly in cut orchids from Walter P. Winsor of Fairhaven, Peter Murray, gardener, and from Col. Charles Pfaff, George Melvin, gardener.

Mr. Winsor's exhibit was very comprehensive in species and varieties and was superbly staged. In the collection of one hundred bottles of assorted orchids, twenty-four distinct dendrobiums were noticeable. Mr. Winsor was awarded the first prize, the Silver Gilt Medal.

Not far behind in general merit was Col. Pfaff's exhibit, which was especially strong in lælias, cattleyas, dendrobiums, and other genera. Col. Pfaff received the second prize, the Silver Medal.

Another notable exhibit was that of assorted carnations by Peter Fisher, magnificently grown and staged, to which the honor of the Silver Gilt Medal was given for superior cultivation. All the classes of carnations were keenly competed for and were nearly all of superior quality, plainly indicating the popularity and esteem in which the carnation is held by all growers of cut flowers.

In the rose classes there was but slim competition which is regrettable, as there are few, if any, flowers better calculated to add dignity and splendor to an exhibition than roses when well grown. The few classes in which there was competition, however, were up to any former standard of excellence, reflecting great credit on their exhibitors. Violets, though not a numerous class, evinced praiseworthy rivalry amongst the violet growers, notwithstanding the unusual prevalence last winter of the violet disease.

The May Exhibition, May 9, was not up to the usual standard in the cut-flower classes. Narcissi were entirely wanting, and tulips and other flowers shown were very indifferent in quality, owing, doubtless, to the long spell of dry weather prevailing at the time as well as previous to that date.

The Rhododendron and Peony Shows in June were combined, the majority of the growers favoring such a change on account of the forwardness of the season. During May and the first part of June the weather was uncommonly dry and warm, advancing the flowering season, and was otherwise greatly against good quality of bloom, as evidenced in most of the exhibits. Peonies were fairly well represented in number and passable in quality considering the general drouth. The same statement may be made regarding the rhododendrons, which showed unmistakably the effect of the unfavorable weather, being considerably inferior in quality, on the whole, to those of former years. Notwithstanding these drawbacks, Walter Hunnewell made a very creditable and extensive show of hardy and tender varieties of rhododendrons filling two large tables.

Mrs. A. W. Blake of Brookline also made a good showing of rhododendrons, and others contributed to a more or less degree. In the peony classes exhibits were made by T. C. Thurlow, A. H. Fewkes, Geo. Hollis, and others prominently identified with the culture of this flower. The Blue Hill Nurseries exhibited a grand collection of perennial cut flowers embracing eighty-two varieties. A fine display of cut orchids of various kinds, cattleyas predominating, was staged by Mr. Newell, gardener to Jason S. Bailey.

At the Saturday show, July 11, there was quite an extensive display of very creditable material, though had it been held a week earlier, delphiniums and *Iris Kaempferi* would doubtless have

been in better condition. The proprietor of the Blue Hill Nurseries made an excellent and extensive exhibition on this occasion, showing his usual good taste in staging the same. M. H. Walsh of Woods Hole showed two new hybrid, rambler roses, one of which, the Lady Gay, was very fine and was awarded a First Class Certificate. It is a very profuse flowerer, rose-pink in color, resembling the Crimson Rambler in habit of growth. The other, for which Honorable Mention was awarded, partook more of the Wichuraiana type in leafage and habit of growth. The single flowers grew in clusters and were of a deep rose color with a whitish center. It is called *La Fiamma*. In the class of named, hardy roses, of not less than twenty-five varieties, Miss Sarah B. Fay was again invincible, carrying all before her in the rose line.

Iris Kœmpferi was well represented, Mrs. J. L. Gardner carrying off the first honors in the iris classes, as well as in the delphinium section, in which she had also a very fine collection.

William Whitman was a close second in the delphinium classes with an almost equally fine collection. T. C. Thurlow and F. A. Blake also made a creditable showing of *Iris Kœmpferi*.

At the exhibition of Saturday, July 25, the Blue Hill Nurseries were again victorious in the general display for effect in a space of thirty or more square feet, filling two large tables with finely arranged and correctly named cut flowers. William Whitman came second with a very meritorious collection in great variety.

Miss Sarah B. Fay exhibited a wonderfully fine display of hybrid roses considering the late date. Hardy aquatics, for some reason or other, were not represented at this show as extensively as they should have been. Mrs. J. L. Gardner won the first prize with a fairly good collection.

At the Saturday exhibition, August 1, there was a fairly representative Saturday show, one of the chief features being a fine exhibit of seasonable orchids put up by Emil Johanssohn, gardener to J. E. Rothwell.

William Whitman staged a very extensive display of named, perennial phloxes in great variety and of good quality, reflecting credit upon Martin Sullivan, the gardener, for his painstaking enterprise in affixing the names as well as in the skill shown in producing such good trusses.

E. L. Lewis and A. F. Estabrook carried off first and second prizes in the order named for very good displays of sweet peas.

On Saturday, August 8, perennial phloxes were shown somewhat extensively and keen competition was evinced between the various contestants, of whom there were quite a number. The several lots being on an almost equal plane of merit made it rather difficult for the judges to place the awards. The results of their careful deliberation will be found in the list of prizes and gratuities following this report. In almost all the exhibits of phloxes were to be seen new varieties of great merit in reference to size of individual flower and fullness of truss.

Mr. Heurlin's Report.

During August and September, dahlias were shown in great profusion, the cactus type still being the leader in popular favor. That this class of flowers will continue in popularity no one who saw the various exhibits can doubt. Probably no finer and better finished flowers than those shown by Walter P. Winsor were ever seen before in the halls.

While gladioli were not shown in as great quantity as formerly, the quality left little to be desired. First Class Certificates were awarded August 15 to Arthur F. Estabrook for Princeps, a brilliant red flower measuring five and one-half inches across; on August 22 to James F. Harlow for Madame Emile Lemoine, a beautiful cream-colored variety, four and one-half inches across; and on August 29 to A. F. Schenkelberger for White Lady, a pure white flower, and, perhaps, the best of all.

Mention should be made of two collections of asters shown August 22 by Mrs. John L. Gardner and William Whitman. This not being a regular prize day for asters adequate rewards could not be given, which we regret, because we never saw a more extensive and varied display of this flower arranged with such taste. There was also exhibited on this date by T. C. Thurlow a collection of some sixty varieties of phloxes, including most of the later French introductions, which was awarded first prize and was a very creditable display.

Chrysanthemums were up to the Boston standard but the variety was not as good as could be wished. It was quite a relief to

look down on E. S. Converse's beautiful Pompons after having strained one's neck for some time in looking up to the giants with their several feet of stem. At future exhibitions, chrysanthemums on long stems should be staged on tables not more than two feet high to give best effect—if for no other reason.

For six introductions of the current year Miss E. Jackson Clark had the only entry taking first prize with these varieties: Cheltoni, Mrs. J. C. Neville, Tancrède de Bastet, W. Duckham, W. A. Etherington, and La Fusion. To the same exhibitor went the prize for "Best Seedling never disseminated" for a pure white variety incurved of the Merza type and of better substance.

It seems to be a fact that the limit in size of flower has been reached and a reaction is setting in towards the more delicate Anemone and Pompon types. A First Class Certificate was awarded to W. A. Manda for Dr. Englehardt, a useful, pink, commercial variety. Carnations were largely staged at this show and M. A. Patten's collection was especially good. Only one entry has been received for the Sears' Prizes, owing undoubtedly to the scale of points by which the aspirants must be judged.

A collection of cannas from R. & J. Farquhar & Co. was given a First Class Certificate. The exhibit consisted of Golden Queen, Golden Leopard, Bridesmaid, Comté le Sach, Hyde Park, and Meteor.

We would recommend the following changes in the Schedule of Prizes:

First: — That three prizes be given for collection of orchids, instead of two, as at present: a Silver Gilt, a Silver, and a Bronze Medal. There are many growers with limited facilities who would be glad to enter for a Bronze Medal not being in positions to compete with the larger growers, nor caring for a gratuity, even if of higher money value than the medal.

Second: — That prizes for marigolds, zinnias, sweet williams, canterbury bells, and "vases" be dropped and the money applied to peonies, hardy phloxes, delphiniums, and irises — German and Japanese mainly.

Third:—That at one exhibition three medals be offered as a first, second, and third prize, instead of money, for hardy, herbaceous flowers and grasses; no restriction to be made as to number of bottles entered.

Out of an appropriation of $1,875 your committee has expended in Prizes and Gratuities $1,325, four Silver Gilt Medals, four Silver Medals, ten First Class Certificates of Merit, and four Honorable Mentions, leaving an unexpended balance of $472.

The following awards have been made during the year:—

PRIZES AND GRATUITIES AWARDED FOR FLOWERS.

1903.

JANUARY 3.

Gratuity:—

Mrs. J. L. Gardner, *Primula Sinensis*, $1.

JANUARY 17.

Gratuity:—

G. McWilliam, Seedling Cypripediums, $4.

FEBRUARY 7.

VIOLETS.—Best collection of varieties, in bunches of fifty blooms each: 1st, N. F. Comley, $4; 3d, Col. C. Pfaff, $2.

Gratuity:—

J. L. Bird, *Acacia pubescens*, $1.

SPRING EXHIBITION.

MARCH 18, 19, 20, 21, 22.

TENDER ROSES IN VASES.—Twelve blooms of American Beauty: 1st, W. H. Elliott, $15; 2d, The Floral Exchange, $12.

Twenty-five blooms of Liberty: 1st, W. H. Elliott, $12.

Twenty-five blooms of any other variety: 1st, Waban Rose Conservatories, Golden Gate, $8; 2d, Waban Rose Conservatories, Ivory, $6.

CARNATIONS.—Vase of one hundred cut blooms, with foliage, not less than six varieties: 1st, M. A. Patten, $8.

Twenty-five blooms of any named Crimson variety:
1st, M. A. Patten, Gov. Roosevelt, $3; 2d, M. A. Patten, Harry Fenn, $2.
Twenty-five blooms of any named Dark Pink variety:
1st, M. A. Patten, Mrs. T. W. Lawson, $3; 2d, L. E. Small, Mrs. T. W. Lawson, $2.
Twenty-five blooms of any named Light Pink variety:
1st, A. Roper, Fair Maid, $3; 2d, M. A. Patten, Fair Maid, $2.
Twenty-five blooms of any named Scarlet variety:
1st, M. A. Patten, J. H. Manley, $3; 2d, L. E. Small, J. H. Manley, $2.
Twenty-five blooms of any named White variety:
1st, M. A. Patten, Gov. Wolcott, $3; 2d, H. A. Stevens Co., Gov. Wolcott, $2.
Twenty-five blooms of any named Yellow Variegated variety:
1st, M. A. Patten, Dorothy Whitney, $3.
Twenty-five blooms of any named White Variegated variety:
1st, M. A. Patten, Prosperity, $3; 2d. S. J. Reuter, Prosperity. $2.
PANSIES.—Forty-eight cut blooms, not less than twenty-four varieties:
1st, Mrs. E. M. Gill, $3.
VIOLETS.—Bunch of one hundred blooms of Lady Hume Campbell:
1st, H. F. Calder, $3; 2d, Col. C. Pfaff, $2.
Bunch of one hundred blooms of Marie Louise:
1st, N. F. Comley, $3.
Bunch of one hundred blooms of any other Double variety:
1st, N. F. Comley, Imperial, $3; 2d, N. F. Comley, Neapolitan, $2.
Bunch of one hundred blooms of any Single variety:
1st, N. F. Comley, Princess of Wales, $3; 2d, G. W. Ayer, Princess of Wales, $2.

Gratuities:—

The Floral Exchange, Vase of Rose, Queen of Edgely, $8.
M. A. Patten, Vase of Carnation, Mrs. M. A. Patten, $3.
Little South Floral Co., Vase of Carnation, The Queen, $3.
A. Roper, Vase of Carnation, Fair Maid, $3.
Mrs. E. M. Gill, Display of Cut Flowers, $5.

MAY 9.

TULIPS.—Forty-eight blooms, not less than twelve named varieties:
1st, W. Whitman, $4.
PANSIES.—Forty-eight blooms, not less than twenty-four varieties:
1st, J. B. Shuttleff, Jr., $3; 2d, Mrs. E. M. Gill, $2.

Gratuities:—

W. E. Coburn, Hardy Hybrid Primulas, $3.
W. E. Coburn, Pansies, $4.
Col. C. Pfaff, Pelargoniums, $2.
Mrs. E. M. Gill, Display of Cut Flowers, $2.

RHODODENDRON AND PÆONY EXHIBITIONS (combined.)

JUNE 5 AND 6. (*Changed from June 5, 6, and 7, and June 13*)

H. H. Hunnewell Fund.

RHODODENDRONS.—Twelve distinct varieties, of unquestioned hardiness, named:

1st, Mrs. A. W. Blake, $15.

Six distinct varieties of unquestioned hardiness, named:

1st, Mrs. J. L. Gardner, $6.

HARDY AZALEAS.—Fifteen varieties, any or all classes:

2d, T. C. Thurlow, $5.

Twelve varieties, one vase of each.

1st, Mrs. A. W. Blake, $4.

Six varieties, one vase of each:

1st, Mrs. J. L. Gardner, $3.

Society's Prizes.

GERMAN IRISES.—Thirty-six vases of three trusses each, not less than twelve varieties:

1st, Mrs. J. L. Gardner, $4.

HARDY PYRETHRUMS.—Display of thirty bottles, single and double, six or more varieties:

1st, A. McLaren, $6.

HARDY ORNAMENTAL TREES AND SHRUBS.—Display of not less than thirty species and varieties, named:

1st, Mrs. J. L. Gardner, $8.

VASE OF FLOWERS:

1st, Mrs. E. M. Gill, $3; 2d, Miss H. B. Winter, $2.

HERBACEOUS PÆONIES.—Collection of thirty or more named varieties, double:

1st, W. Whitman, $10; 2d, T. C. Thurlow, $8.

Collection of twelve or more named varieties, single:

1st, T. C. Thurlow, $4.

Vase of blooms on long stems, arranged for effect, in the Society's large China vases:

1st, Mrs. J. L. Gardner, $8; 2d, W. Whitman, $6; 3d, W. J. Clemson, $4.

Gratuities:—

W. Hunnewell, Rhododendrons, $30.

Mrs. A. W. Blake, " $5.

Mrs. J. L. Gardner, Roses and Rhododendrons, $8.

J. S. Bailey, Display of Orchids, $10.
A. H. Fewkes, Display of Pæonies, $5.
E. A. & W. K. Wood, Vase of Oriental Poppies, $2.
T. C. Thurlow, Vase of *Kalmia latifolia*, red variety, $2.
Blue Hill Nurseries, Herbaceous Perennials, $10.
Mrs. E. M. Gill, Cut Flowers, $3.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 16 AND 17. (*Changed from June 23 and 24.*)

Theodore Lyman Fund.

HARDY ROSES.— Twenty-four distinct named varieties, three of each variety:
1st, Miss S. B. Fay, $25; 2d, Miss S. B. Fay, $20.

Society's Prizes.

Sixteen named varieties, three of each variety:
1st, Miss S. B. Fay, $12.
Twelve named varieties, three of each variety:
1st, Miss S. B. Fay, $10.
Twenty-four named varieties, one of each:
1st, Miss S. B. Fay, $10.
Eighteen named varieties, one of each:
1st, Miss S. B. Fay, $8.
Twelve named varieties, one of each:
1st, Miss S. B. Fay, $6.
Twenty-four blooms of Mme. Gabriel Luizet:
1st, Miss S. B. Fay, $6; 2d, P. B. Bradley, $4.
Six blooms of any other variety:
1st, Miss S. B. Fay, Ulrich Brunner, $3; 2d, Miss S. B. Fay, Clio, $2
General Display.—One hundred bottles of Hardy Roses in the Society's racks:
1st, Miss S. B. Fay, $10; 2d, Mrs. E. M. Gill, $9.

BASKET OF ROSES.—Arranged for effect:
1st, Mrs. E. M. Gill, $5.

SWEET WILLIAMS.—Display of eighteen vases, three trusses each, not less than six varieties:
1st, W. Whitman, $3; 2d, W. E. Coburn, $2; 3d, W. Whitman, $1.

Gratuities:—

Miss S. B. Fay, Display of Roses, $50.
A. H. Fewkes, Display of New Pæonies, $2.
W. Whitman, Display of Sweet Williams and Foxgloves, $3.
Blue Hill Nurseries, Herbaceous Perennials, $5.
Mrs. E. M. Gill, Display of Cut Flowers, $3.
W. H. Heustis, Display of Shrubs, $3.

JULY 11.

HARDY ROSES.—Collection, named, not less than twenty-five varieties, filling fifty vases, one in each vase:
1st, Miss S. B. Fay, $12.

IRIS KÆMPFERI.—Fifteen varieties, three of each, in vases:
1st, Mrs. J. L. Gardner, $6; 2d, T. C. Thurlow, $4.

Six varieties, three of each, in vases:
1st, Mrs. J. L. Gardner, $3; 2d, F. A. Blake, $2.

CAMPANULA MEDIUM.—Collection, not less than fifteen bottles:
1st, W. Whitman, $5.

DELPHINIUMS.—Display, thirty vases of three spikes each:
1st, Mrs. J. L. Gardner, $8; 2d, W. Whitman, $6; 3d, F. A. Blake, $4.

HARDY HERBACEOUS FLOWERS AND GRASSES.—Thirty bottles:
1st, Blue Hill Nurseries, $6; 2d, Blue Hill Nurseries, $5.

VASE OF FLOWERS:
1st, Mrs. E. M. Gill, $4; 2d, Goodell Farm, $3.

Gratuities:—

Miss S. B. Fay, Display of Hardy Roses, $6.
Mrs. J. L. Gardner, *Iris Kæmpferi*, $2.
W. Whitman, Sweet Williams, $1.
Mrs. J. B. Lawrence, Cut Flowers, $2.
Mrs. E. M. Gill, " " $2.
W. Whitman, " " $1.

JULY 18.

VASE OF FLOWERS.—Best arranged:
1st, Mrs. E. M. Gill, $4; 2d, Mrs. W. Winter, $3.

Gratuities:—

Miss S. B. Fay, Display of Hardy Roses, $6.
G. Hollis, Display of Perennial Phloxes, $1.
W. E. Coburn, Hollyhocks, $2.
Blue Hill Nurseries, two large vases of Cut Flowers, $5.
Mrs. E. M. Gill, Display of Cut Flowers, $1.

JULY 25.

HARDY AQUATIC FLOWERS.—Collection, named:
1st, Mrs. J. L. Gardner, $8.

GENERAL DISPLAY.—Arranged for effect, in space of thirty or more square feet:
1st, Blue Hill Nurseries, $6; 2d, W. Whitman, $4.

Gratuities:—

M. H. Walsh, Display of Rose, Lady Gay, $2.
Miss S. B. Fay, Display of Hybrid Roses, $5.
G. Hollis, Perennial Phloxes, $2.
W. Whitman, Hollyhocks, $1.
Mrs. E. M. Gill, Cut Flowers, $3.

AUGUST 1.

SWEET PEAS.—Display of named varieties, filling thirty vases, arranged with their own foliage:
1st, E. L. Lewis, $6; 2d, A. F. Estabrook, $4.

VASE OF FLOWERS.—For table decoration:
1st, Mrs. E. M. Gill, $3; 2d, Mrs. W. Winter, $2.

Gratuities:—

W. Whitman, Sweet Peas, $2.
E. L. Lewis, " " $1.
A. F Estabrook, " " $1.
G. Hollis, Perennial Phloxes, $2.
W. Whitman, Perennial Phloxes and Dahlias, $4.
J. E. Rothwell, Display of Orchids, $7.
Mrs. J. B. Lawrence, Cut Flowers, $1.
J. Thorpe, Cut Flowers, $1.
Blue Hill Nurseries, large vases of Cut Flowers, $6.

AUGUST 8.

PERENNIAL PHLOXES.—Twelve named varieties:
1st, T. C. Thurlow, $5; 2d, G. Hollis, $4.

GENERAL DISPLAY.—Arranged for effect in a space of thirty or more square feet:
1st, Blue Hill Nurseries, $6; 2d, W. Whitman, $4.

Gratuities:—

W. Whitman, Display of Phloxes, $4.
T. C. Thurlow, Perennial Phloxes, $2.
Mrs. G. Duncan, " " $1.

A. McLaren, Seedling Phloxes, $1.
Mrs. E. M. Gill, Display of Cut Flowers, $3.
W. Whitman, Vase of Cut Flowers, $1.

AUGUST 15.

ANNUALS.—General display, named, not less than fifty varieties, filling not less than one hundred and fifty bottles:
1st, Mrs. J. L. Gardner, $8; 2d, E. S. Converse, $6

Gratuities:—

W. G. Winsor, Dahlias, $3.
Mrs. J. B. Lawrence, " $2.
C. Wellington, " $1.
O. B. Hadwen, Gladioli, $1.
Blue Hill Nurseries, Perennial Phloxes, $3.
J. B. Shurtleff, Jr., Marigolds, $1.
Blue Hill Nurseries, two large vases of Cut Flowers, $2.
Mrs. E. M. Gill, Display of Cut Flowers, $3.

AUGUST 22.

PERENNIAL PHLOXES.—General Display, in not less than thirty vases:
1st, T. C. Thurlow, $6; 2d, G. Hollis, $5; 3d, F. J. Rea, $3.

Gratuities:—

W. G. Winsor, Dahlias, $3.
R. P. Struthers, " $2.
J. S. Chase, " $1.
C. Wellington, " $1.
W. Whitman, Collection of Asters, $5.
Mrs. J. L. Gardner, Collection of Asters and Zinnias, $6.
C. S. Pratt, Gladioli, $2.
J. B. Shurtleff, Jr., Vase of Salpiglossis, $1.
Blue Hill Nurseries, Cut Flowers, $3.
Mrs. E. M. Gill, " " $2.

AUGUST 29.

Theodore Lyman Fund.

ASTERS.—Of all classes, fifty vases, not less than twelve varieties, three flowers in each vase:
1st, E. S. Converse, $6; 2d, Mrs. J. L. Gardner, $5.
HARDY HERBACEOUS FLOWERS AND GRASSES.—Thirty bottles:
1st, Blue Hill Nurseries, $6; 2d, Blue Hill Nurseries, $5.

Gratuities:—

W. G. Winsor, Dahlias, $3.
C. Wellington, " $2.
N. W. T. Knott, " $2.
Mrs. L. Towle, " $1.
C. S. Pratt, Gladioli, $3.
O. B. Hadwen, " $1.
J. B. Shurtleff, Jr., Cannas, $1.
Shady Hill Nursery Co., three Vases of Flowers, $1.
Blue Hill Nurseries, Cut Flowers, $1.
Mrs. E. M. Gill, " " $2.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 24, 25, 26, 27. (*Postponed from September 10-13.*)

Theodore Lyman Fund.

GLADIOLI.—Display of named and unnamed varieties, filling one hundred vases, arranged for effect with any foliage:
1st, C. S. Pratt, $8; 2d, W. P. Lothrop, $6.

Society's Prizes.

DAHLIAS.—Show, eighteen blooms, named varieties:
1st, W. P. Lothrop, $4; 2d, W. C. Winter, $3.
Fancy, eighteen blooms, named varieties:
1st, W. C. Winter, $4; 2d, E. W. Ela, $3.
Cactus, twelve blooms, named varieties:
1st, J. K. Alexander, $4; 2d, E. W. Ela, $3.
Decorative, twelve blooms, named varieties:
1st, W. C. Winter, $3; 2d, W. G. Winsor, $2.
Show, six blooms, named varieties:
1st, W. C. Winter, $2; 2d, W. H. Symonds, $1.
Fancy, six blooms, named varieties:
1st, W. H. Symonds, $2; 2d, W. P. Lothrop, $1.
Best single bloom, of any class, introduction of 1901 or later:
1st, H. F. Burt, Master Carl, $1.
Pompon, twelve vases of three blooms each, named varieties:
1st, W. H. Symonds, $3; 2d, J. K. Alexander, $2.
Single, twelve vases of three blooms each, named varieties:
1st, E. W. Ela, $2; 2d, W. C. Winter, $1.

General Display, one hundred or more bottles, in the Society's racks, arranged for effect:
1st, W. C. Winter, $8; 2d, R. P. Struthers, $6; 3d, W. G. Winsor, $4.

MARIGOLDS.—Display of French and African, filling twenty-five vases:
1st, G. F. Fabyan, $3; 2d, Goodell Farm, $2.

DOUBLE ZINNIAS.—Fifty flowers, not less than twelve varieties:
1st, A. McLaren, $3; 2d, S. H. Symmes, $2.

HARDY HERBACEOUS FLOWERS AND GRASSES.—Thirty bottles:
1st, Blue Hill Nurseries, $6; 2d, Blue Hill Nurseries, $5.

VASE OF FLOWERS.—For table decoration:
1st, Mrs. E. M. Gill, $3; 2d, Miss H. B. Winter, $2.

Gratuities:—

J. E. Rothwell, Collection of Orchids, $5.
M. H. Walsh, Hybrid Tea Rose, Urania and Rambler Rose, Débutante, $5.
N. W. T. Knott, Display of Dahlias, $2.
Mrs. E. M. Gill, " " " $1.
Blue Hill Nurseries, Collection of Phloxes, $2.
F. J. Rea, " " " $1.
Carl Blomberg, Hardy Herbaceous Flowers, $3.
Blue Hill Nurseries, " " " $2.
Blue Hill Nurseries, seven large vases of Cut Flowers, $20.
Mrs. E. M. Gill, Display of Cut Flowers, $2.

CHRYSANTHEMUM SHOW.

NOVEMBER 5, 6, 7, 8.

Josiah Bradlee Fund.

CHRYSANTHEMUMS.—Twenty-five blooms, of twenty-five distinct varieties, named; a piece of plate or value in money:
1st, Miss E. J. Clark, $18; 2d, E. A. Clark, $12; 3d, E. S. Converse, $8.

Six vases, of six named varieties, ten blooms each:
1st, Miss E. J. Clark, $30.

Henry A. Gane Memorial Fund.

For the best six specimen blooms of Mrs. Jerome Jones or any of the sports thereof:
1st, Col. C. Pfaff, $3; 2d, T. Howden, $2.

Society's Prizes.

Twelve blooms, Incurved, named, in vases:
1st, E. S. Converse, $6.

Twelve blooms, Japanese, named, in vases:
1st, E. A. Clark, $8; 2d, Miss E. J. Clark, $5.
Twelve blooms, Japanese Incurved, named, in vases:
1st, P. W. Moen, $10; 2d, P. B. Robb, $6; 3d, E. A. Clark, $4.
Twelve blooms, Anemone, named, in vases:
1st, E. S. Converse, $6.
Six blooms, Japanese, named, in vases:
1st, P. W. Moen, $6; 2d, E. S. Converse, $4.
Six blooms, Japanese Incurved, named, in vases:
1st, P. W. Moen, $6; 2d, E. S. Converse, $4.
Six blooms, Reflexed, named, in vases:
1st, P. W. Moen, $6; 2d, T. Doliber, $4.
Six blooms, Anemone, named, in vases:
1st, E. S. Converse, $5.
Six best varieties, named, introductions of the current year:
1st, Miss E. J. Clark, $5.
Vase of ten blooms on long stems, Pink, named:
1st, C. D. Sias, Viviand Morel, $10; 2d, Miss E. J. Clark, Viviand Morel, $8
Vase of ten blooms on long stems, Red, named:
1st, E. A. Clark, John Shrimpton, $10; 2d, Miss E. J. Clark, John Shrimpton, $8; 3d, C. D. Sias, John Shrimpton, $6.
Vase of ten blooms on long stems, White, named:
1st, Mrs. R. C. Hooper, Timothy Eaton, $10; 2d, Miss E. J. Clark, Merza, $8, 3d, C. D. Sias, Merza, $6.
Vase of ten blooms on long stems, Yellow, named:
1st, T. Howden, Col. D. Appleton, $10; 2d, Mrs. R. C. Hooper, Col. D. Appleton, $8; 3d, E. A. Clark, Col. D. Appleton, $6.
Vase of ten blooms on long stems, any other color, named:
1st, H. Dumaresq, Lady Hanham, $10; 2d, Miss E. J. Clark, Kate Broomhead, $8; 3d, C. D. Sias, Kate Broomhead, $6.
Best Seedling, never disseminated, six blooms:
Miss E. J. Clark, $5.

Gratuities:—

T. Doliber, Display of Chrysanthemums, $20.
F. S. Moseley, " " " $10.
Mrs. E. M. Gill, " " " $8.
E. A. Clark, " " " $4.
Peter Fisher, Carnation, Nelson Fisher, $2.
A. Roper, Vase of Carnation, Fair Maid, $2.
M. A. Patten, Collection of Carnations, $10.
F. S. Moseley, Centrepiece of Carnations, $5.
Mrs. M. W. Peirce, Collection of Carnations, $3.

SOCIETY'S SILVER GILT MEDALS.

February 7. Col. C. Pfaff, first prize for display of Orchids, named species and varieties, filling not less than twenty bottles.

Spring Exhibition, March 18–22. W. P. Winsor, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Peter Fisher, for Display of Superior Carnations.

Chrysanthemum Show, November 5–8. Col. C. Pfaff, first prize for Orchids, named species and varieties, filling not less than twenty bottles.

KELWAY SILVER GILT MEDAL.

Rhododendron and Pæony Exhibition, June 6 and 7. T. C. Thurlow, first prize for Collection of Herbaceous Pæonies, eighteen named varieties, single or double.

SOCIETY'S SILVER MEDALS.

February 7. J. E. Rothwell, second prize for Orchids, named species and varieties, filling not less than twenty bottles.

Spring Exhibition, March 18–22. Col. C. Pfaff, second prize for Orchids, named species and varieties, filling not less than twenty bottles.

Rose and Strawberry Exhibition, June 16 and 17. Miss S. B. Fay, for Rose, Soleil d' Or.

Chrysanthemum Show, November 5–8. E. S. Converse, for Collection of Pompon Chrysanthemums.

FIRST CLASS CERTIFICATES OF MERIT.

Rose and Strawberry Exhibition, June 16 and 17. Blue Hill Nurseries, for *Incarvillea Delavayi*.

July 11. M. H. Walsh, for new hybrid Rambler Rose, Lady Gay.

August 8. Blue Hill Nurseries, for new Phlox, Blue Hills.

August 15. A. F. Estabrook, for Gladiolus, Princeps.

August 22. J. F. Harlow, for Gladiolus, Madame Emile Lemoine.

August 29. A. F. Schenkelberger, for Gladiolus, White Lady.

Chrysanthemum Show, November 5–8. W. A. Manda, for Chrysanthemum, Dr. Englehardt.

John Breitmeyer's Sons, for Seedling Hybrid Tea Rose.

Peter Fisher, for Carnation, Mrs. M. A. Patten.

R. & J. Farquhar & Co., for Collection of New Cannas.

HONORABLE MENTION.

Spring Exhibition, March 18–22. G. E. Buxton, for Seedling Carnation, Marion Patten Buxton.

April 4. M. H. Walsh, for Seedling Rose, Urania.

July 11. M. H. Walsh, for Seedling Rose, La Fiamma.

Annual Exhibition of Plants and Flowers, September 24–27. J. W. Clark, for Seedling Gladiolus.

JULIUS HEURLIN,
KENNETH FINLAYSON,
MICHAEL H. NORTON,
WILLIAM NICHOLSON,
ELIJAH A. WOOD,
} *Committee on Flowers.*

REPORT

OF THE

COMMITTEE ON FRUITS

FOR THE YEAR 1903.

By E. W. WOOD, Chairman.

The weather conditions have been unfavorable for the growth of the fruits of New England the past season, apples suffering least, peaches, strawberries, and cherries most. The apple crop, considering it was the "off" year, was unusually abundant; the market has been fairly well supplied, and a larger quantity has been exported than on any previous odd calendar year.

Strawberries were in most places an exceptionally light crop. Late frosts destroyed the early bloom and severe drouth in May and early June, where there were no facilities for irrigation, unfavorably affected the later blossoms. A much smaller quantity of fruit was shown at the Strawberry Exhibition than usual, as a result of the smaller quantity grown and a heavy rain falling the afternoon before the show, making it difficult to obtain perfect specimens for exhibition. William H. Monroe from Beverly has shown each year for the past three years the week following the exhibition a large, handsome berry named Commonwealth. He has never been able to pick ripe fruit to show at the regular exhibition, which would seem to make it a desirable late variety.

All the varieties of fruit for which premiums were offered have been shown during the weekly exhibitions, though in smaller quantity than usual. The blossom buds on the peach trees were

nearly all killed during the winter, and a less quantity of fruit was shown than for several years past. Of cherries a single dish was the only representative of that fruit, the blossoms being killed by frost.

There was a full bloom on the pear trees but owing to cold, wet weather there was an imperfect set of fruit and not more than from one-half to two-thirds the usual crop. Some fine specimens were shown at the later exhibitions. The exhibitions show a continued decrease in varieties grown, especially by those who grow for market; some of the former old and well-known varieties have almost entirely disappeared from the exhibitions. No new fruits have been shown requiring special mention.

Mrs. A. E. Monblo of Malden has shown at several exhibitions a very handsome fruit under the name of India Raspberry, which has attracted much attention from visitors. Under her cultivation it has proved more productive and has sold readily in Boston market for more than double the price of strawberries in their season. She continued to pick the fruit from the last of July until the green fruit and blossoms were killed by frost. It is not a new fruit but is grown in different countries under different names. It is usually catalogued in the United States as the Strawberry Raspberry, though there seems to be little to ally it with the strawberry, as the plants grow in bush form three or four feet in height with remarkably handsome, glossy-green foliage, in form resembling that of the rose.

The appropriation for fruits was $1,275. The Committee has awarded in Prizes and Gratuities $964, one Silver and one Bronze Medal.

PRIZES AND GRATUITIES AWARDED FOR FRUITS.

1903.

SPRING EXHIBITION.

MARCH 18, 19, 20, 21, 22.

Gratuities:—

W. H. Spooner, Wagener Apples, $1.
Goodell Farm, Rhode Island Greening Apples, $1.
M. W. Chadbourne, Collection of Apples, $2.

RHODODENDRON AND PÆONY EXHIBITIONS (combined.)

JUNE 6 AND 7. (*Changed from June 5, 6, and 7, and June 13.*)

Gratuity:—

W. Heustis & Son, Marshall Strawberries, $2.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 16 AND 17. (*Changed from June 23 and 24.*)

Theodore Lyman Fund.

STRAWBERRIES.—Four quarts of any variety:

1st, G. V. Fletcher, Marshall, the Lyman Plate, value $15; 2d, W. J. Clemson, Marshall, the Lyman Plate, value $12; 3d, W. Heustis & Son, Belmont, the Lyman Plate, value $10; 4th, G. F. Wheeler, Minute Man, the Lyman Plate, value $8.

Regular Prizes.

For the largest and best collection, not less than fifteen baskets of two quarts each, and not less than five varieties:-

2d, G. F. Wheeler, $10.

Ten baskets, not less than three varieties, two quarts each:

1st, G. V. Fletcher, $10; 2d, I. E. Coburn, $8.

Five baskets of one variety, two quarts each:

1st, G. V. Fletcher, Marshall, $6; 2d, G. F. Wheeler, Minute Man, $5; 3d, G. F. Wheeler, Sample, $4.

Two quarts of Belmont:

1st, I. E. Coburn, $3.

Brandywine:

1st, E. S. Converse, $3.

Bubach:

1st, G. V. Fletcher, $3; 2d, I. E. Coburn, $2.

Clyde:

3d, G. F. Wheeler, $1.

Haverland:

1st, I. E. Coburn, $3.

Jessie:

1st, I. E. Coburn, $3.

Marshall:

1st, G. V. Fletcher, $3; 2d, P. B. Bradley, $2.

Miner's Prolific:
2d, G. F. Wheeler, $2.
Nick Ohmer:
1st, W. Heustis & Son, $3; 2d, E. S. Converse, $2; 3d, I. E. Coburn, $1.
Sample:
1st, E. S. Converse, $3; 2d, W. Heustis & Son, $2; 3d, I. E. Coburn, $1.
Any other variety:
1st, B. M. Smith, Salem, $3; 2d, I. E. Coburn, New York, $2; 3d, L. C. Weathers, Weathers, $1.
One quart of any new variety not previously exhibited:
1st, B. M. Smith, Governor Rollins, $3.

FOREIGN GRAPES.—Two bunches of any variety:
1st, Mrs. R. M. Clark, $5; 2d, E. S. Converse, $3.

Gratuity:—

P. B. Bradley, Nectarines, $2.

JULY 11.

STRAWBERRIES.—Two quarts of any variety:
1st, W. H. Monroe, Commonwealth, $3; 2d, W. Heustis & Son, Belmont, $2.

Gratuities:—

Miss Vera Chapell, Cherries, $1.
W. J. Clemson, Currants, $1.
W. J. Clemson, Gooseberries, $1.
Mrs. E. J. Cutter, Raspberries, $1.

JULY 18.

RASPBERRIES.—Two quarts of any variety:
1st, Mrs. E. J. Cutter, Cuthbert, $3.

BLACKCAPS.—Two quarts of any variety:
1st, E. S. Converse, $2.

CURRANTS.—Two quarts of any Red variety:
1st, E. S. Converse, $3; 2d, Mrs. E. M. Gill, $2; 3d, W. J. Clemson, $1.
Two quarts of any White variety:
1st, J. S. Chase, $3.

GOOSEBERRIES.—Two quarts of any variety of American origin:
1st, J. S. Chase, Triumph, $3; 2d, W. G. Kendall, Columbus, $2; 3d, W. G. Kendall, Chatauqua, $1.

JULY 25.

RASPBERRIES.—Two quarts of any variety:
1st, Mrs. E. J. Cutter, $3.
CURRANTS.—Two quarts of any Red variety:
2d, Mrs. E. M. Gill, $2.
GOOSEBERRIES.—Two quarts of any Foreign variety.
1st, J. S. Chase, Whitesmith, $3; 2d, W. G. Kendall, Industry, $2.

Gratuity:—

E. S. Converse, Collection of Foreign Grapes, $3.

AUGUST 1.

APPLES.—Yellow Transparent:
1st, E. S. Converse, $3; 2d, J. S. Chase, $2; 3d, G. L. Brown, $1.
PEARS.—Summer Doyenne:
1st, E. S. Converse, $3; 2d, W. Fenno, $2.

Gratuity:—

W. J. Clemson, Blackberries, $1.

AUGUST 8.

APPLES.—Red Astrachan:
1st, W. Fenno, $3; 2d, Dr. E. A. Mayell, $2; 3d, W. J. Clemson, $1.
Sweet Bough:
1st, Mrs. A. E. Underwood, $3; 2d, F. W. Damon, $2; 3d, W. Heustis & Son, $1.
Any other variety:
1st, G. V. Fletcher, Williams, $3; 2d, J. C. Stone, Williams, $2; 3d, M. W. Chadbourne, Williams, $1.
PEARS.—Giffard:
1st, W. Fenno, $3; 2d, F. W. Damon, $2; 3d, J. L. Bird, $1.
Any other variety:
1st, E. S. Converse, Bloodgood, $3; 2d, G. V. Fletcher, Clapp's Favorite $2; 3d, W. Fenno, Osband's Summer, $1.
BLACKBERRIES.—Two quarts of any variety:
1st, M. W. Chadbourne, $3; 2d, W. J. Clemson, $2; 3d, A. Low, $1.
PEACHES.—Open culture, any variety:
1st, D. L. Fiske, $3.

Gratuity:—

D. L. Fiske, Plums, $1.

AUGUST 15.

APPLES.— Oldenburg:
1st, J. L. Bird, $3; 2d, A. Low, $2.
Any other variety:
1st, M. W. Chadbourne, Williams, $3; 2d, J. C. Stone, Williams, $2; 3d, G. V. Fletcher, Williams, $1.
PEARS —Clapp's Favorite:
1st, F. W. Damon, $3; 2d, E. Torrey, $2; 3d, W. Heustis & Son, $1.
Any other variety:
1st, W. Fenno, Giffard, $3; 2d, F. W. Damon, Giffard, $2.
PEACHES.—Twelve specimens, of outdoor culture, of any variety:
1st, D. L. Fiske, $3; 2d, A. Low, $2.
Six specimens of cold house or pot culture, of any variety:
1st, Mrs. J. C. Whitin, Crimson Garland, $3; 2d, E. S. Converse, Noblesse, $2.
BLACKBERRIES.—Two quarts of any variety:
1st, M. W. Chadbourne, $3; 2d, A. Low, $2.
PLUMS.—Japanese, any variety:
1st, D. L. Fiske, Abundance, $3; 2d, G. D. Monroe, Burbank, $2
NECTARINES.—Orchard house culture, twelve specimens:
1st, Mrs. J. C. Whitin, Pine Apple, $4.
FOREIGN GRAPES.—Two bunches of any variety:
1st, Mrs. J. C. Whitin, Golden Queen, $4.

AUGUST 22.

APPLES.—Chenango:
1st, E. E. Cole, $3; 2d, G. L. Brown, $2.
Summer Pippin:
1st, W. Fenno, $3.
Williams:
1st, V. Frost, $3; 2d, J. C. Stone, $2; 3d, G. V. Fletcher, $1.
Any other variety:
1st, W. Heustis & Son, Gravenstein, $3; 2d, W. Fenno, Sops of Wine, $2; 3d, M. W. Chadbourne, Porter, $1.
PEARS.—Rostiezer:
1st, E. S. Converse, $3.
Tyson:
1st, C. F. Curtis, $3; 2d, A. T. Brown, $2; 3d, J. L. Bird, $1.
Any other variety:
1st, F. W. Damon, Clapp's Favorite, $3; 2d, A. T. Brown, Bartlett, $2; 3d, E. S. Converse, Clapp's Favorite, $1.
PEACHES.—Any variety:
1st, F. H. Evans, Carman, $3; 2d, D. L. Fiske, Mamie Ross, $2; 3d, D. L. Fiske, Coolidge's Favorite, $1.

PLUMS. JAPANESE.—Abundance:
2d, D. L. Fiske, $2.
Burbank:
1st, G. D. Moore, $3; 2d, D. L. Fiske, $2.
Any other variety:
1st, F. W. Damon, Bradshaw, $3; 2d, G. V. Fletcher, Bradshaw, $2; 3d, D. L. Fiske, White Kelsey, $1.

AUGUST 29.

APPLES.—Foundling:
2d, C. M. Handley, $2.
Gravenstein:
1st, W. Heustis & Son, $3; 2d, G. D. Moore, $2.
Porter:
1st, C. M. Handley, $3; 2d, W. Heustis& Son, $2; 3d, G. V. Fletcher, $1.
Any other variety:
1st, E. E. Cole, Alexander, $3; 2d, E. E. Cole, Chenango, $2; 3d, W. Fenno, Summer Pippin, $1.
PEARS.—Bartlett:
1st, W. Milman, $3; 2d, V. Frost, $2; 3d, S. S. Symmes, $1.
Any other variety:
1st, W. Fenno, Flemish Beauty, $3; 2d, M. W. Chadbourne, Flemish Beauty, $2; 3d, M. W. Chadbourne, Boussock, $1.
PEACHES.—Single dish, of any variety:
1st, F. H. Evans, Carman, $3; 2d, D. L. Fiske, Champion, $2.
PLUMS.—Any variety:
1st, E. L. Lewis, White Kelsey, $3; 2d, S. S. Symmes, Burbank, $2; 3d, G. D. Moore, Burbank, $1.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS AND OCTOBER EXHIBITION OF FRUITS AND VEGETABLES (combined.)

SEPTEMBER 24, 25, 26, 27. (*Changed from September 10–13 and October 3.*)

Theodore Lyman Fund.

For the heaviest and best ripened bunch of any Foreign Black Grape, not less than six pounds:
1st, Miss E. J. Clark, a Silver Medal; 2d, Miss E. J. Clark, a Bronze Medal.

Society's Prizes.

APPLES.—Fall Orange or Holden:
1st, W. A. Green, $3; 2d, C. M. Handley, $2.
Foundling:
2d, C. M. Handley, $2.
Garden Royal:
2d, C. B. Travis, $2.
Gravenstein:
1st, Mrs. A. E Underwood, $3; 2d, W. Heustis & Son, $2; 3d, J. B. Shurtleff, Jr., $1.
Hubbardston:
1st, C. C. Shaw, $3; 2d, M. W. Chadbourne, $2; 3d, C. M. Handley, $1.
Mackintosh:
1st, F. J. Kinney, $3; 2d, C. C. Shaw, $2: 3d, G. V. Fletcher, $1.
Maiden's Blush:
1st, W. Fenno, $3; 2d, H. W. Anderson, $2.
Mother:
1st, C. C. Shaw, $3.
Porter:
1st, Mrs. A. E. Underwood, $3; 2d, W. Heustis & Son, $2; 3d, C. M. Handley, $1.
Red Bietigheimer:
2d, M. Sullivan, $2.
Sutton:
1st, A. E. Hartshorn, $3.
Washington Strawberry:
1st, F. J. Kinney, $3; 2d, A. E. Hartshorn, $2; 3d, W. Fenno, $1.
Wealthy:
1st, J. S. Hodge, $3; 2d, H. W. Anderson, $2; 3d, C. M. Handley, $1.
Any other variety:
1st, E. E. Cole, Alexander, $3; 2d, W. A. Green, 20 Oz., $2; 3d, A. E. Hartshorn, Rhode Island Greening, $1.
CRAB APPLES.—Transcendent, twenty-four specimens:
1st, Miss L. F. Wiggin, $2.
Any other variety:
1st, W. H. Teele, Hyslop, $2; 2d, A. E. Hartshorn, Hyslop, $1.
PEARS.—Bartlett:
1st, V. Frost, $3; 2d, G. V. Fletcher, $2; 3d, J. B. Shurtleff, Jr., $1.
Hardy:
1st, A. K. Gould, $3; 2d, C. F. Curtis, $2; 3d, Mrs. E. M. Gill, $1.
Paradise of Autumn:
1st, W. Milman, $3; 2d, W. Heustis & Son, $2; 3d, W. Fenno, $1.
Souvenir du Congrès:
1st, W. Fenno, $3; 2d, C. F. Curtis, $2.

Any other variety:
1st, C. W. Libby, Flemish Beauty, $3; 2d, W Fenno, Flemish Beauty, $2; 3d, C. F. Curtis, Boussock, $1

PEACHES.—Crosby:
2d, A. Low, $2.
Oldmixon Freestone:
1st, D. L. Fiske, $3.
Stump the World:
2d, D. L. Fiske, $2.
Any other variety:
1st, D. L. Fiske, $3.

PLUMS.—Imperial Gage:
1st, E. S. Converse, $3; 2d, J. B. Shurtleff, Jr., $2.
Lombard:
1st, G. V. Fletcher, $3.
Any other variety:
1st, G. V. Fletcher, Bradshaw, $3.

FOREIGN GRAPES.—Two bunches of Black Alicante:
1st, Miss E. J. Clark, $5.
Lady Downs:
1st, Miss E. J. Clark, $5.
Muscat of Alexandria:
1st, Miss E. J. Clark, $5.
Any other variety:
1st, Miss E. J. Clark, $5; 2d, Miss E. J. Clark, $4; 3d, Miss E. J. Clark, $3.

NATIVE GRAPES.—Six bunches of Campbell's Early:
1st, L. Darling, $3.
Moore's Early:
1st, F. W. Damon, $3.
Any other variety:
1st, C. W. Libby, Diamond, $3; 2d, F. W. Damon, Concord, $2; 3d, C. W. Libby, Hartford Prolific, $1.

Samuel Appleton Fund

APPLES.—Baldwin:
1st, E. E. Cole, $3; 2d, G. V. Fletcher, $2; 3d, A. E. Hartshorn, $1.
Hubbardston:
1st, C. C. Shaw, $3; 2d, M. W. Chadbourne, $2.

PEARS.—Bosc:
1st, W. Wheeler, $3; 2d, F. E. Coolidge, $2; 3d, C. F. Curtis, $1.
Sheldon:
1st, F. E. Coolidge, $3; 2d, S. S Symmes, $2; 3d, A. T. Brown, $1.

Benjamin V. French Fund.

APPLES.—Gravenstein:
1st, W. Heustis & Son, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, W. A. Green, $1.
Rhode Island Greening:
1st, A. E. Hartshorn, $3; 2d, G. V. Fletcher, $2; 3d, C. C. Shaw, $1.

Marshall P. Wilder Fund.

PEARS.—Anjou:
1st, A. T. Brown, $3; 2d, W. Milman, $2; 3d, G. V. Fletcher, $1.
Bartlett:
1st, W. H. Derby, $3; 2d, G. V. Fletcher, $2; 3d, W. A. Green, $1.
GRAPES.—Concord, twelve bunches:
1st, G. V. Fletcher, $3; 2d, J. S. Chase, $2.
Worden:
1st, J. S. Chase, $3.

Theodore Lyman Fund.

APPLES.—Fall Orange or Holden:
1st, W. A. Green, $3; 2d, C. M. Handley, $2.
Fletcher Russet:
1st, G. V. Fletcher, $3; 2d, E. R. Teele, $2; 3d, C. F. Curtis, $1.
Maiden's Blush:
1st, W. Fenno, $3; 2d, H. R. Kinney, $2; 3d, W. C. Winter, $1.
Mother:
1st, H. R. Kinney, $3; 3d, W. C. Winter, $1.
Porter:
1st, C. M. Handley, $3; 2d, W. Heustis & Son, $2; 3d, J. C. Stone, $1.
Pound Sweet:
1st, G. V. Fletcher, $3; 2d, G. D. Clapp, $2.
Sutton:
1st, E. M. Bruce, $3; 2d, A. E. Hartshorn, $2.
Palmer or Washington Royal:
2d, A. E. Hartshorn, $2.
Wealthy:
1st, H. W. Anderson, $3; 2d, M. Sullivan, $2; 3d, C. M. Handley, $1.
Any other variety:
1st, A. E. Hartshorn, Washington Strawberry, $3; 2d, W. A. Green, 20 Oz., $2; 3d, M. Martin, Reliance, $1.

Regular Prizes.

PEARS.—Angouleme:
1st, W. H. Derby, $3; 2d, C. F. Curtis, $2; 3d, A. T. Brown, $1.
Clairgeau:
1st, F. W. Damon, $3; 2d, C. F. Curtis, $2; 3d, J. S. Chase, $1.

Comice:
1st, J. L. Bird, $3; 2d, A. T. Brown, $2; 3d, F. W. Damon, $1.
Dana's Hovey:
1st, F. W. Damon, $3; 2d, G. V. Fletcher, $2; 3d, A. T. Brown, $1.
Diel:
1st, A. T. Brown, $3; 2d, G. F. Pierce, $2; 3d, F. W. Damon, $1.
Fulton:
1st, E. S. Converse, $3; 2d, J. L. Bird, $2.
Hardy:
1st, C. F. Curtis, $3; 2d, W. Fenno, $2; 3d, E. S. Converse, $1.
Howell:
1st, W. Fenno, $3.
Josephine of Malines:
1st, J. L. Bird, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, W. Fenno, $1.
Lawrence:
1st, Mrs. C. D. Hodges, $3; 2d, A. T. Brown, $2; 3d, W. Fenno, $1.
Louise Bonne of Jersey:
1st, A. T. Brown, $3; 2d, Mrs. C. Whittier, $2; 3d, C. F. Curtis, $1.
Marie Louise:
1st, E. Torrey, $3; 2d, A. T. Brown, $2; 3d, C. E. Swain, $1.
Merriam:
1st, C. F. Curtis, $3; 2d, F. W. Damon, $2; 3d, J. L. Bird, $1.
Onondaga:
1st, J. L. Bird, $3; 2d, W. Fenno, $2; 3d, C. B. Travis, $1.
Seckel:
1st, W. Milman, $3; 2d, S. S. Symmes, $2; 3d, G. V. Fletcher, $1.
Superfin:
1st, F. W. Damon, $3; 2d, E. B. Wilder, $2; 3d, J. L. Bird, $1.
Urbaniste:
1st, J. L. Bird, $3; 2d, E. S. Converse, $2; 3d, A. T. Brown, $1.
Any other variety:
1st, J. C. Stone, Flemish Beauty, $3; 2d, C. E. Swain, Boussock, $2; 3d, M. W. Chadbourne, Langelier, $1.

QUINCES.—Any variety:
1st, G. V. Fletcher, Rea, $3; 2d, G. V. Fletcher, Orange, $2; 3d, J. S. Chase, $1.

PEACHES.—Crawford's Late:
1st, W. J. Clemson, $3.
Any other variety:
1st, D L. Fiske, Elberta, $3.

PLUMS.—Yellow Egg:
1st, G. V. Fletcher, $2.
Any other variety:
1st, J. B. Shurtleff, Jr., $2.

NATIVE GRAPES.—Six bunches of Brighton:
3d, C. W. Libby, $1.

Delaware:
1st, J. S. Chase, $3; 2d, C. W. Libby, $2; 3d, W. J. Clemson, $1.
Herbert:
1st, C. W. Libby, $3.
Niagara:
1st, C. W. Libby, $3; 2d, W. J. Clemson, $2; 3d, J. S. Chase, $1.
Pocklington:
1st, C. W. Libby, $3; 2d, F. W. Damon, $2.
Any other variety:
1st, C. W. Libby, $3.
CRANBERRIES.—Half-peck:
1st, S. P. Chase, $3.

Gratuities:—

J. L. Bird, Collection of Pears, $3.
E. B. Wilder, " " " $3.
M. W. Chadbourne, " " " $1.
Goodell Farm, Collection of Apples, $1.
Mrs. A. E. Monblo, India Raspberry, $2.

CHRYSANTHEMUM SHOW.

NOVEMBER 5, 6, 7, 8.

Benjamin V. French Fund.

APPLES.—Baldwin:
1st, J. C. Stone, $3; 2d, C. C. Shaw, $2; 3d, C. F. Boyden, $1.
Rhode Island Greening:
1st, Mrs. A. E. Underwood, $3; 2d, A. E. Hartshorn, $2; 3d, E. M. Bruce, $1.

Society's Prizes.

APPLES.—Danvers Sweet:
1st, W. Fenno, $3.
Fameuse:
1st, E. E. Cole, $3; 2d, E. M. Bruce, $2.
Fletcher Russet:
1st, G. V. Fletcher, $3; 2d, C. F. Curtis, $2; 3d, C. M. Handley, $1.
Hubbardston:
1st, C. C. Shaw, $3; 2d, Mrs. F. B. Davidson, $2; 3d, W. Fenno, $1.
Hunt Russet:
1st, C. F. Boyden, $3.

Jacob's Sweet:
1st, M. Martin, $3.
Lady's Sweet:
1st, E. E. Cole, $3; 2d, C. C. Shaw, $2.
Mackintosh:
1st, J. F. Stott, $3; 2d, E. M. Bruce, $2; 3d, G. V. Fletcher, $1.
Northern Spy:
1st, E. M. Bruce, $3; 2d, S. R. Smith, $2; 3d, G. V. Fletcher, $1.
Roxbury Russett:
1st, C. F. Boyden, $3; 2d, A. E. Hartshorn, $2; 3d, E. E. Cole, $1.
Tolman's Sweet:
1st, E. E. Cole, $3; 2d, G. V. Fletcher, $2; 3d, Mrs. A. E. Underwood, $1.
Tompkins King:
1st, E. M. Bruce, $3.
Any other variety:
1st, J. Parker, Bellflower, $3; 2d, W. A. Green, 20 Oz., $2; 3d, E. M. Bruce, Sutton Beauty, $1.

PEARS.—Angouleme:
1st, E. Torrey, $3; 2d, W. H. Derby, $2; 3d, F. W. Damon, $1.
Anjou:
1st, W. Milman, $3; 2d, F. W. Damon, $2; 3d, Miss M. B. Mendum, $1.
Bosc:
1st, G. V. Fletcher, $3; 2d, A. K. Gould, $2; 3d, C. E. Swain, $1.
Clairgeau:
1st, W. J. Wheeler, $3; 2d, F. W. Damon, $2; 3d, C. F. Curtis, $1.
Comice:
1st, J. L. Bird, $3; 2d, A. T. Brown, $2; 3d, W. Fenno, $1.
Dana's Hovey:
1st, W. G. Kendall, $3; 2d, F. W. Damon, $2; 3d, G. V. Fletcher, $1.
Diel:
1st, A. K. Gould, $3; 2d, F. W. Damon, $2; 3d, A. T. Brown, $1.
Josephine of Malines:
1st, W. Fenno, $3; 2d, J. L. Bird, $2.
Lawrence:
1st, W. Fenno, $3; 2d, F. W. Damon, $2; 3d, W. A. Green, $1.
Vicar:
1st, E. S. Converse, $3; 2d, A. T. Brown, $2; 3d, J. L. Bird, $1.
Any other variety:
1st, E. A. Hall, Glout Morceau, $3; 2d, W. Milman, Mt. Vernon, $2; 3d, F. W. Damon, Seckel, $1.

QUINCES.—Any variety:
1st, G. V. Fletcher, Champion, $3; 2d, G. V. Fletcher, Orange, $2; 3d, J. S. Chase, Champion, $1.

Gratuities:—

W. Fenno, Collection of Apples and Pears, $2.
M. W Chadbourne, " " " " " $1.
C. P. Trowbridge, Cranberries, $1.
C. P. Trowbridge, " $1.
H. F. Gowell, " $1.

E. W. Wood,
Charles F. Curtis,
Warren Fenno,
J. Willard Hill,
George F. Pierce,
John L. Bird,
Frederick W. Damon.

Committee on Fruits.

REPORT

OF THE

COMMITTEE ON VEGETABLES

FOR THE YEAR 1903.

By WARREN HOWARD HEUSTIS, CHAIRMAN.

Your committee has to report that the exhibitions of the past year have been very well sustained and well up to the usual high standard of this Society. While occasionally we have new varieties of vegetables it is quite hard to improve on existing sorts.

At the winter shows the lettuce was remarkably heavy and reminded us of that grown in summer in the open, which indicates that the greenhouse business is each year getting nearer perfection.

At the Spring Exhibition there was a very large and instructive exhibition of seedling potatoes by Hon. Aaron Low of Hingham, which attracted much attention from visitors. It consisted of from fifty to seventy-five varieties from one to five years from the seed ball to maturity. It takes from three to five years of cultivation to determine the value of varieties from the seed, as many of them are not worthy of retaining. Quite a number of the varieties which have been tested for five years promise to be of superior value in productiveness and quality. The varieties one year from the seed ball showed much difference in form and color. Among the more mature kinds the following named varieties are promising: Plymouth Rock, Farmers' Pride, Belle of Hingham, Snowball, Low's Triumph, Bay State, and Wenham Beauty. Also quite a number designated by numbers are highly promising.

The season was rather earlier this year than common and very fine, wrinkled peas were shown quite early in June. The cool summer was unfavorable for melon culture and the quality of this vegetable was not as good as usual: only some of the salmon-fleshed varieties were up to the mark. We would except some forced under glass and shown July 25, which were fine. The weather conditions must be right to have good melons and, in fact, this is true with all classes of vegetables. The exhibitions scheduled for September 10–13 and October 3 were held together on September 24–27 and were a credit to any society.

The celery, cauliflower, endive, potatoes and tomatoes were all worthy of special mention; and we are reminded in this connection that the gardeners in the vicinity of Boston seem to be losing their once firm hold on the celery prizes, as most of them are going to Bristol County. However we must keep trying.

We had several very interesting and instructive exhibits of Chinese vegetables which were prepared and staged in an attractive manner.

There have been expended during the year for prizes and gratuities $877.00, leaving an unexpended balance of $23.00, out of which a Silver Medal and a Bronze Medal are to be paid.

PRIZES AND GRATUITIES AWARDED FOR VEGETABLES.

1903.

January 3.

Celery.—Four roots of any variety:

1st, W. Heustis & Son, Pascal, $3; 2d, W. Heustis & Son, Boston Market, $2; 3d, A. E. Hartshorn, Boston Market, $1.

Lettuce.—Four heads of Tennisball:

1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2.

Parsley.—Two quarts:

1st, A. E. Hartshorn, $3; 2d, A. Nixon, $2.

Gratuities:—

H. R. Kinney, Mushrooms, $2.
A. E. Hartshorn, Collection, $3.
W. Heustis & Son, " $1.

FEBRUARY 7.

RADISHES.—Four bunches of any variety:
1st, A. E. Hartshorn, $3; 2d, H. R. Kinney, $2; 3d, W. W. Rawson, $1.
CELERY.—Four roots:
1st, W. Heustis & Son, $3; 2d, H. R. Kinney, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Fours heads of Tennisball:
1st, W. W. Rawson, $3; 2d, H. R. Kinney, $2; 3d, G. D. Moore, $1.
MUSHROOMS.—Twenty-four specimens:
1st, H. R. Kinney, $3; 2d, I. E. Coburn, $2; 3d, W. C. Winter, $1.

Gratuities:—

A. E. Hartshorn, Collection, $2.
W. Heustis & Son, " $2.

SPRING EXHIBITION.

MARCH 18, 19, 20, 21, 22.

William J. Walker Fund.

RADISHES.—Four bunches of Turnip Rooted:
1st, W. W. Rawson, $2; 2d, A. E. Hartshorn, $1.
CUCUMBERS.—Pair of White Spine:
1st, W. W. Rawson, $3.
DANDELIONS.—Peck:
1st, A. E. Hartshorn, $3.
LETTUCE.—Four heads:
1st, W. W. Rawson, $3; 2d, G. D. Moore, $2; 3d, A. E. Hartshorn, $1.
TOMATOES.—Twelve specimens:
1st, W. J. Clemson, Best of All, $3; 2d, W. J. Clemson, Freedom, $2.

Gratuities:—

A. Low, Seedling Potatoes, $7.
M. W. Chadbourne, Artichokes, $1.
W. Heustis & Son, Collection, $2.
A. E. Hartshorn, " $1

APRIL 4.

Gratuity:—

A. Low, Spinach, $1.

MAY 9.

William J. Walker Fund.

ASPARAGUS. — Four bunches, twelve stalks each:
1st, E. Parker, $3; 2d, W. H. Hunt, $2; 3d, A. E. Hartshorn, $1.
CUCUMBERS.—Pair of White Spine:
1st, E. M. Bruce, $3; 2d, G. D. Moore, $2.
Pair of any other variety:
1st, E. M. Bruce, English Frame, $3; 2d, E. M. Bruce, Proctor's Model, $2.
SPINACH.—Peck:
1st, A. Low, Round Leaf, $3; 2d, A. Low, Victoria, $2; 3d, G. D. Moore, $1.
DANDELIONS.—Peck:
1st, A. E. Hartshorn, $3; 2d, J. C. Stone, $2; 3d, W. Heustis & Son, $1.
RHUBARB.—Twelve stalks, open culture:
1st, E Parker, $3; 2d, W. Heustis & Son, $2; 3d, W. J. Clemson, $1.

Gratuities:—

W. Heustis & Son, Collection, $4.
G. D. Moore, " $2.
A. Low, " $1.
A. E. Hartshorn, " $1.

RHODODENDRON AND PÆONY EXHIBITION (*combined*).

JUNE 6, 7. (*Changed from June 5, 6, and 7, and June 13*)

Theodore Lyman Fund.

BEETS.—Twelve specimens of any variety:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2.
RADISHES.—Four bunches:
1st, W. Heustis & Son, $2; 2d, E. L. Lewis, $1.
ASPARAGUS.—Four bunches, twelve stalks each:
1st, W. H. Hunt, $3; 2d, E. Parker, $2; 3d, A. E. Hartshorn, $1.

CUCUMBERS.—Pair:

1st, Geo. D. Moore, $3; 2d, J. C. Stone, $2; 3d, W. W. Rawson, $1.

LETTUCE.—Four heads:

1st, W. W. Rawson, $3; 2d, G. D. Moore, $2; 3d, E. L. Lewis, $1.

RHUBARB.—Twelve stalks, open culture.

1st, E. Parker, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.

MUSHROOMS.—Twenty-four specimens:

1st, W. C. Winter, $3.

Gratuities:—

G. D. Moore, Collection, $2.
A. E. Hartshorn, " $1.
W. Heustis & Son, " $1.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 16, 17. (*Changed from June 23, 24.*)

BEETS.— Twelve Summer Turnip Rooted:

1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.

ONIONS.—Twelve specimens:

1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, W. J. Clemson, $1.

CUCUMBERS.—Pair of any variety:

1st, J. C. Stone, $3; 2d, G. D. Moore, $2; 3d, Mrs. R. M. Clark, $1.

LETTUCE.—Four heads of any variety:

1st, E. L. Lewis, Immensity, $3; 2d, E. L. Lewis, Deacon, $2; 3d, A. E. Hartshorn, Deacon, $1.

PEAS.—Half-peck of any variety:

1st, W. J. Clemson, Gradus, $3; 2d, P. B. Bradley, Gradus, $2; 3d, A. E. Hartshorn, Thomas Laxton, $1.

Gratuities:—

G. D. Moore, Collection, $2.
W. Heustis & Son, " $1.

JUNE 30.

Gratuity:—

W. Heustis & Son, Cabbage, $1.

JULY 11.

ONIONS.—Twelve specimens:
1st, E. L. Lewis, $2; 2d, G. D. Moore, $1.
SQUASHES.—Summer, four specimens:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, W. Heustis & Son, $1.
CABBAGES.— Three of any variety, trimmed:
1st, G. D. Moore, Early Summer, $3; 2d, W. Heustis & Son, Early Summer, $2; 3d, W. Heustis & Son, Early Spring, $1.
BEANS.—Half-peck of any variety:
1st, A. E. Hartshorn, $3; 2d, G. D. Moore, $2; 3d, J. C. Stone, $1.
PEAS.—Half peck of any variety:
1st, J. Thorpe, $3; 2d, E. L. Lewis, $2; 3d, F. Tetlow, $1.

Gratuities:—

A. E. Hartshorn, Tomatoes, $1.
G. D. Moore, Collection, $2.
W. Heustis & Son, " $1.
A. Low, " $1.
W. Whitman, " $1.

JULY 18.

Levi Whitcomb Fund.

POTATOES.—Twelve specimens:
1st, W. J. Clemson, Early Rose, $3; 2d, E. L. Lewis, Early Northern, $2; 3d, A. Low, Early Essex, $1.
CABBAGES.—Three Drumhead, trimmed:
1st, W. Heustis & Son, Early Summer, $3; 2d, W. Heustis & Son, All Seasons, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Four heads, any variety:
1st, E. L. Lewis, Immensity, $3; 2d, E. L. Lewis, Defiance, $2; 3d, E. L. Lewis, Deacon, $1.
BEANS.—Half-peck of any variety:
1st, W. Whitman, $3; 2d, J. C. Stone, $2; 3d, A. E. Hartshorn, $1.
SQUASHES.—Summer, four specimens:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.

Gratuities:—

A. E. Hartshorn, Collection, $1.
A. Low, " $1.
J. C. Stone, " $1.
W. Heustis & Son, " $1.

Any other variety:
1st, C. W. Libby, Flemish Beauty, $3; 2d, W Fenno, Flemish Beauty, $2; 3d, C. F. Curtis, Boussock, $1

PEACHES.—Crosby:
2d, A. Low, $2.
Oldmixon Freestone:
1st, D. L. Fiske, $3.
Stump the World:
2d, D. L. Fiske, $2.
Any other variety:
1st, D. L. Fiske, $3.

PLUMS.—Imperial Gage:
1st, E. S. Converse, $3; 2d, J. B. Shurtleff, Jr., $2.
Lombard:
1st, G. V. Fletcher, $3.
Any other variety:
1st, G. V. Fletcher, Bradshaw, $3.

FOREIGN GRAPES.—Two bunches of Black Alicante:
1st, Miss E. J. Clark, $5.
Lady Downs:
1st, Miss E. J. Clark, $5.
Muscat of Alexandria:
1st, Miss E. J. Clark, $5.
Any other variety:
1st, Miss E. J. Clark, $5; 2d, Miss E. J. Clark, $4; 3d, Miss E. J. Clark, $3.

NATIVE GRAPES.—Six bunches of Campbell's Early:
1st, L. Darling, $3.
Moore's Early:
1st, F. W. Damon, $3.
Any other variety:
1st, C. W. Libby, Diamond, $3; 2d, F. W. Damon, Concord, $2; 3d, C. W. Libby, Hartford Prolific, $1.

Samuel Appleton Fund.

APPLES.—Baldwin:
1st, E. E. Cole, $3; 2d, G. V. Fletcher, $2; 3d, A. E. Hartshorn, $1.
Hubbardston:
1st, C. C. Shaw, $3; 2d, M. W. Chadbourne, $2.

PEARS.—Bosc:
1st, W. Wheeler, $3; 2d, F. E. Coolidge, $2; 3d, C. F. Curtis, $1.
Sheldon:
1st, F. E. Coolidge, $3; 2d, S. S. Symmes, $2; 3d, A. T. Brown, $1.

Benjamin V. French Fund.

APPLES.—Gravenstein:
1st, W. Heustis & Son, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, W. A. Green, $1.
Rhode Island Greening:
1st, A. E. Hartshorn, $3; 2d, G. V. Fletcher, $2; 3d, C. C. Shaw, $1.

Marshall P. Wilder Fund.

PEARS.—Anjou:
1st, A. T. Brown, $3; 2d, W. Milman, $2; 3d, G. V. Fletcher, $1.
Bartlett:
1st, W. H. Derby, $3; 2d, G. V. Fletcher, $2; 3d, W. A. Green, $1.
GRAPES.—Concord, twelve bunches:
1st, G. V. Fletcher, $3; 2d, J. S. Chase, $2.
Worden:
1st, J. S. Chase, $3.

Theodore Lyman Fund.

APPLES.—Fall Orange or Holden:
1st, W. A. Green, $3; 2d, C. M. Handley, $2.
Fletcher Russet:
1st, G. V. Fletcher, $3; 2d, E. R. Teele, $2; 3d, C. F. Curtis, $1.
Maiden's Blush:
1st, W. Fenno, $3; 2d, H. R. Kinney, $2; 3d, W. C. Winter, $1.
Mother:
1st, H. R. Kinney, $3; 3d, W. C. Winter, $1.
Porter:
1st, C. M. Handley, $3; 2d, W. Heustis & Son, $2; 3d, J. C. Stone, $1.
Pound Sweet:
1st, G. V. Fletcher, $3; 2d, G. D. Clapp, $2.
Sutton:
1st, E. M. Bruce, $3; 2d, A. E. Hartshorn, $2.
Palmer or Washington Royal:
2d, A. E. Hartshorn, $2.
Wealthy:
1st, H. W. Anderson, $3; 2d, M. Sullivan, $2; 3d, C. M. Handley, $1.
Any other variety:
1st, A. E. Hartshorn, Washington Strawberry, $3; 2d, W. A. Green, 20 Oz., $2; 3d, M. Martin, Reliance, $1.

Regular Prizes.

PEARS.—Angouleme:
1st, W. H. Derby, $3; 2d, C. F. Curtis, $2; 3d, A. T. Brown, $1.
Clairgeau:
1st, F. W. Damon, $3; 2d, C. F. Curtis, $2; 3d, J. S. Chase, $1.

Comice:
1st, J. L. Bird, $3; 2d, A. T. Brown, $2; 3d, F. W. Damon, $1.
Dana's Hovey:
1st, F. W. Damon, $3; 2d, G. V. Fletcher, $2; 3d, A. T. Brown, $1.
Diel:
1st, A. T. Brown, $3; 2d, G. F. Pierce, $2; 3d, F. W. Damon, $1.
Fulton:
1st, E. S. Converse, $3; 2d, J. L. Bird, $2.
Hardy:
1st, C. F. Curtis, $3; 2d, W. Fenno, $2; 3d, E. S. Converse, $1.
Howell:
1st, W. Fenno, $3.
Josephine of Malines:
1st, J. L. Bird, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, W. Fenno, $1.
Lawrence:
1st, Mrs. C. D. Hodges, $3; 2d, A. T. Brown, $2; 3d, W. Fenno, $1.
Louise Bonne of Jersey:
1st, A. T. Brown, $3; 2d, Mrs. C. Whittier, $2; 3d, C. F. Curtis, $1.
Marie Louise:
1st, E. Torrey, $3; 2d, A. T. Brown, $2; 3d, C. E. Swain, $1.
Merriam:
1st, C. F. Curtis, $3; 2d, F. W. Damon, $2; 3d, J. L. Bird, $1.
Onondaga:
1st, J. L. Bird, $3; 2d, W. Fenno, $2; 3d, C. B. Travis, $1.
Seckel:
1st, W. Milman, $3; 2d, S. S. Symmes, $2; 3d, G. V. Fletcher, $1.
Superfin:
1st, F. W. Damon, $3; 2d, E. B. Wilder, $2; 3d, J. L. Bird, $1.
Urbaniste:
1st, J. L. Bird, $3; 2d, E. S. Converse, $2; 3d, A. T. Brown, $1.
Any other variety:
1st, J. C. Stone, Flemish Beauty, $3; 2d, C. E. Swain, Boussock, $2; 3d, M. W. Chadbourne, Langelier, $1.

QUINCES.—Any variety:
1st, G. V. Fletcher, Rea, $3; 2d, G. V. Fletcher, Orange, $2; 3d, J. S. Chase, $1.

PEACHES.—Crawford's Late:
1st, W. J. Clemson, $3.
Any other variety:
1st, D L. Fiske, Elberta, $3.

PLUMS.—Yellow Egg:
1st, G. V. Fletcher, $2.
Any other variety:
1st, J. B. Shurtleff, Jr., $2.

NATIVE GRAPES.—Six bunches of Brighton:
3d, C. W. Libby, $1.

Delaware:
1st, J. S. Chase, $3; 2d, C. W. Libby, $2; 3d, W. J. Clemson, $1.
Herbert:
1st, C. W. Libby, $3.
Niagara:
1st, C. W. Libby, $3; 2d, W. J. Clemson, $2; 3d, J. S. Chase, $1.
Pocklington:
1st, C. W. Libby, $3; 2d, F. W. Damon, $2.
Any other variety:
1st, C. W. Libby, $3.
CRANBERRIES.—Half-peck:
1st, S. P. Chase, $3.

Gratuities:—

J. L. Bird, Collection of Pears, $3.
E. B. Wilder, " " " $3.
M. W. Chadbourne, " " " $1.
Goodell Farm, Collection of Apples, $1.
Mrs. A. E. Monblo, India Raspberry, $2.

CHRYSANTHEMUM SHOW.

NOVEMBER 5, 6, 7, 8.

Benjamin V. French Fund.

APPLES.—Baldwin:
1st, J. C. Stone, $3; 2d, C. C. Shaw, $2; 3d, C. F. Boyden, $1.
Rhode Island Greening:
1st, Mrs. A. E. Underwood, $3; 2d, A. E. Hartshorn, $2; 3d, E. M. Bruce, $1.

Society's Prizes.

APPLES.—Danvers Sweet:
1st, W. Fenno, $3.
Fameuse:
1st, E. E. Cole, $3; 2d, E. M. Bruce, $2.
Fletcher Russet:
1st, G. V. Fletcher, $3; 2d, C. F. Curtis, $2; 3d, C. M. Handley, $1.
Hubbardston:
1st, C. C. Shaw, $3; 2d, Mrs. F. B. Davidson, $2; 3d, W. Fenno, $1.
Hunt Russet:
1st, C. F. Boyden, $3.

Jacob's Sweet:
1st, M. Martin, $3.
Lady's Sweet:
1st, E. E. Cole, $3; 2d, C. C. Shaw, $2.
Mackintosh:
1st, J. F. Stott, $3; 2d, E. M. Bruce, $2; 3d, G. V. Fletcher, $1.
Northern Spy:
1st, E. M. Bruce, $3; 2d, S. R. Smith, $2; 3d, G. V. Fletcher, $1.
Roxbury Russett:
1st, C. F. Boyden, $3; 2d, A. E. Hartshorn, $2; 3d, E. E. Cole, $1.
Tolman's Sweet:
1st, E. E. Cole, $3; 2d, G. V. Fletcher, $2; 3d, Mrs. A. E. Underwood, $1.
Tompkins King:
1st, E. M. Bruce, $3.
Any other variety:
1st, J. Parker, Bellflower, $3; 2d, W. A. Green, 20 Oz., $2; 3d, E. M. Bruce, Sutton Beauty, $1.

PEARS.—Angouleme:
1st, E. Torrey, $3; 2d, W. H. Derby, $2; 3d, F. W. Damon, $1.
Anjou:
1st, W. Milman, $3; 2d, F. W. Damon, $2; 3d, Miss M. B. Mendum, $1.
Bosc:
1st, G. V. Fletcher, $3; 2d, A. K. Gould, $2; 3d, C. E. Swain, $1.
Clairgeau:
1st, W. J. Wheeler, $3; 2d, F. W. Damon, $2; 3d, C. F. Curtis, $1.
Comice:
1st, J. L. Bird, $3; 2d, A. T. Brown, $2; 3d, W. Fenno, $1.
Dana's Hovey:
1st, W. G. Kendall, $3; 2d, F. W. Damon, $2; 3d, G. V. Fletcher, $1.
Diel:
1st, A. K. Gould, $3; 2d, F. W. Damon, $2; 3d, A. T. Brown, $1.
Josephine of Malines:
1st, W. Fenno, $3; 2d, J. L. Bird, $2.
Lawrence:
1st, W. Fenno, $3; 2d, F. W. Damon, $2; 3d, W. A. Green, $1.
Vicar:
1st, E. S. Converse, $3; 2d, A. T. Brown, $2; 3d, J. L. Bird, $1.
Any other variety:
1st, E. A. Hall, Glout Morceau, $3; 2d, W. Milman, Mt. Vernon, $2; 3d, F. W. Damon, Seckel, $1.

QUINCES.—Any variety:
1st, G. V. Fletcher, Champion, $3; 2d, G. V. Fletcher, Orange, $2; 3d, J. S. Chase, Champion, $1.

Gratuities:—

W. Fenno, Collection of Apples and Pears, $2.
M. W. Chadbourne, " " " " " $1.
C. P. Trowbridge, Cranberries, $1.
C. P. Trowbridge, " $1.
H. F. Gowell, " $1.

E. W. Wood,
Charles F. Curtis,
Warren Fenno,
J. Willard Hill,
George F. Pierce,
John L. Bird,
Frederick W. Damon.

Committee on Fruits.

Gratuities:—

H. R. Kinney, Mushrooms, $2.
A. E. Hartshorn, Collection, $3.
W. Heustis & Son, " $1.

FEBRUARY 7.

RADISHES.—Four bunches of any variety:
1st, A. E. Hartshorn, $3; 2d, H. R. Kinney, $2; 3d, W. W. Rawson, $1.
CELERY.—Four roots:
1st, W. Heustis & Son, $3; 2d, H. R. Kinney, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Fours heads of Tennisball:
1st, W. W. Rawson, $3; 2d, H. R. Kinney, $2; 3d, G. D. Moore, $1.
MUSHROOMS.—Twenty-four specimens:
1st, H. R. Kinney, $3; 2d, I. E. Coburn, $2; 3d, W. C. Winter, $1.

Gratuities:—

A. E. Hartshorn, Collection, $2.
W. Heustis & Son, " $2.

SPRING EXHIBITION.

MARCH 18, 19, 20, 21, 22.

William J. Walker Fund.

RADISHES.—Four bunches of Turnip Rooted:
1st, W. W. Rawson, $2; 2d, A. E. Hartshorn, $1.
CUCUMBERS.—Pair of White Spine:
1st, W. W. Rawson, $3.
DANDELIONS.—Peck:
1st, A. E. Hartshorn, $3.
LETTUCE.—Four heads:
1st, W. W. Rawson, $3; 2d, G. D. Moore, $2; 3d, A. E. Hartshorn, $1.
TOMATOES.—Twelve specimens:
1st, W. J. Clemson, Best of All, $3; 2d, W. J. Clemson, Freedom, $2.

Gratuities:—

A. Low, Seedling Potatoes, $7.
M. W. Chadbourne, Artichokes, $1.
W. Heustis & Son, Collection, $2.
A. E. Hartshorn, " $1

APRIL 4.

Gratuity:—

A. Low, Spinach, $1.

MAY 9.

William J. Walker Fund.

ASPARAGUS. — Four bunches, twelve stalks each:
1st, E. Parker, $3; 2d, W. H. Hunt, $2; 3d, A. E. Hartshorn, $1.
CUCUMBERS.—Pair of White Spine:
1st, E. M. Bruce, $3; 2d, G. D. Moore, $2.
Pair of any other variety:
1st, E. M. Bruce, English Frame, $3; 2d, E. M. Bruce, Proctor's Model, $2.
SPINACH.—Peck:
1st, A. Low, Round Leaf, $3; 2d, A. Low, Victoria, $2; 3d, G. D. Moore, $1.
DANDELIONS.—Peck:
1st, A. E. Hartshorn, $3; 2d, J. C. Stone, $2; 3d, W. Heustis & Son, $1.
RHUBARB.—Twelve stalks, open culture:
1st, E. Parker, $3; 2d, W. Heustis & Son, $2; 3d, W. J. Clemson, $1.

Gratuities:—

W. Heustis & Son, Collection, $4.
G. D. Moore, " $2.
A. Low, " $1.
A. E. Hartshorn, " $1.

RHODODENDRON AND PEONY EXHIBITION (*combined*).

JUNE 6, 7. (*Changed from June 5, 6, and 7, and June 13.*)

Theodore Lyman Fund.

BEETS.—Twelve specimens of any variety:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2.
RADISHES.—Four bunches:
1st, W. Heustis & Son, $2; 2d, E. L. Lewis, $1.
ASPARAGUS.—Four bunches, twelve stalks each:
1st, W. H. Hunt, $3; 2d, E. Parker, $2; 3d, A. E. Hartshorn, $1.

CUCUMBERS.—Pair:

1st, Geo. D. Moore, $3; 2d, J. C. Stone, $2; 3d, W. W. Rawson, $1.

LETTUCE.—Four heads:

1st, W. W. Rawson, $3; 2d, G. D. Moore, $2; 3d, E. L. Lewis, $1.

RHUBARB.—Twelve stalks, open culture.

1st, E. Parker, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.

MUSHROOMS.—Twenty-four specimens:

1st, W. C. Winter, $3.

Gratuities:—

G. D. Moore, Collection, $2.
A. E. Hartshorn, " $1.
W. Heustis & Son, " $1.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 16, 17. (*Changed from June 23, 24.*)

BEETS.— Twelve Summer Turnip Rooted:

1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.

ONIONS.—Twelve specimens:

1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, W. J. Clemson, $1.

CUCUMBERS.—Pair of any variety:

1st, J. C. Stone, $3; 2d, G. D. Moore, $2; 3d, Mrs. R. M. Clark, $1.

LETTUCE.—Four heads of any variety:

1st, E. L. Lewis, Immensity, $3; 2d, E. L. Lewis, Deacon, $2; 3d, A. E. Hartshorn, Deacon, $1.

PEAS.—Half-peck of any variety:

1st, W. J. Clemson, Gradus, $3; 2d, P. B. Bradley, Gradus, $2; 3d, A. E. Hartshorn, Thomas Laxton, $1.

Gratuities:—

G. D. Moore, Collection, $2.
W. Heustis & Son, " $1.

JUNE 30.

Gratuity:—

W. Heustis & Son, Cabbage, $1.

JULY 11.

ONIONS.—Twelve specimens:
1st, E. L. Lewis, $2; 2d, G. D. Moore, $1.
SQUASHES.—Summer, four specimens:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, W. Heustis & Son, $1.
CABBAGES.— Three of any variety, trimmed:
1st, G. D. Moore, Early Summer, $3; 2d, W. Heustis & Son, Early Summer, $2; 3d, W. Heustis & Son, Early Spring, $1.
BEANS.—Half-peck of any variety:
1st, A. E. Hartshorn, $3; 2d, G. D. Moore, $2; 3d, J. C. Stone, $1.
PEAS.—Half peck of any variety:
1st, J. Thorpe, $3; 2d, E. L. Lewis, $2; 3d, F. Tetlow, $1.

Gratuities:—

A. E. Hartshorn, Tomatoes, $1.
G. D. Moore, Collection, $2.
W. Heustis & Son, " $1.
A. Low, " $1.
W. Whitman, " $1.

JULY 18.

Levi Whitcomb Fund.

POTATOES.—Twelve specimens:
1st, W. J. Clemson, Early Rose, $3; 2d, E. L. Lewis, Early Northern, $2; 3d, A. Low, Early Essex, $1.
CABBAGES.—Three Drumhead, trimmed:
1st, W. Heustis & Son, Early Summer, $3; 2d, W. Heustis & Son, All Seasons, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Four heads, any variety:
1st, E. L. Lewis, Immensity, $3; 2d, E. L. Lewis, Defiance, $2; 3d, E. L. Lewis, Deacon, $1.
BEANS.—Half-peck of any variety:
1st, W. Whitman, $3; 2d, J. C. Stone, $2; 3d, A. E. Hartshorn, $1.
SQUASHES.—Summer, four specimens:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.

Gratuities:—

A. E. Hartshorn, Collection, $1.
A. Low, " $1.
J. C. Stone, " $1.
W. Heustis & Son, " $1.

CUCUMBERS.—Pair:
1st, Geo. D. Moore, $3; 2d, J. C. Stone, $2; 3d, W. W. Rawson, $1.
LETTUCE.—Four heads:
1st, W. W. Rawson, $3; 2d, G. D. Moore, $2; 3d, E. L. Lewis, $1.
RHUBARB.—Twelve stalks, open culture.
1st, E. Parker, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.
MUSHROOMS.—Twenty-four specimens:
1st, W. C. Winter, $3.

Gratuities:—

G. D. Moore, Collection, $2.
A. E. Hartshorn, " $1.
W. Heustis & Son, " $1.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 16, 17. (*Changed from June 23, 24.*)

BEETS.— Twelve Summer Turnip Rooted:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.
ONIONS.—Twelve specimens:
1st, A. E. Hartshorn, $3: 2d, E. L. Lewis, $2; 3d, W. J. Clemson, $1.
CUCUMBERS.—Pair of any variety:
1st. J. C. Stone, $3; 2d, G. D. Moore, $2; 3d, Mrs. R. M. Clark, $1.
LETTUCE.—Four heads of any variety:
1st, E. L. Lewis, Immensity, $3; 2d, E. L. Lewis, Deacon, $2; 3d, A. E. Hartshorn, Deacon, $1.
PEAS.—Half-peck of any variety:
1st, W. J. Clemson, Gradus, $3; 2d, P. B. Bradley, Gradus, $2; 3d, A. E. Hartshorn, Thomas Laxton, $1.

Gratuities:—

G. D. Moore, Collection, $2.
W. Heustis & Son, " $1.

JUNE 30.

Gratuity:—

W. Heustis & Son, Cabbage, $1.

JULY 11.

ONIONS.—Twelve specimens:
1st, E. L. Lewis, $2; 2d, G. D. Moore, $1.
SQUASHES.—Summer, four specimens:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, W. Heustis & Son, $1.
CABBAGES.— Three of any variety, trimmed:
1st, G. D. Moore, Early Summer, $3; 2d, W. Heustis & Son, Early Summer, $2; 3d, W. Heustis & Son, Early Spring, $1.
BEANS.—Half-peck of any variety:
1st, A. E. Hartshorn, $3; 2d, G. D. Moore, $2; 3d, J. C. Stone, $1.
PEAS.—Half peck of any variety:
1st, J. Thorpe, $3; 2d, E. L. Lewis, $2; 3d, F. Tetlow, $1.

Gratuities:—

A. E. Hartshorn, Tomatoes, $1.
G. D. Moore, Collection, $2.
W. Heustis & Son, " $1.
A. Low, " $1.
W. Whitman, " $1.

JULY 18.

Levi Whitcomb Fund.

POTATOES.—Twelve specimens:
1st, W. J. Clemson, Early Rose, $3; 2d, E. L. Lewis, Early Northern, $2; 3d, A. Low, Early Essex, $1.
CABBAGES.—Three Drumhead, trimmed:
1st, W. Heustis & Son, Early Summer, $3; 2d, W. Heustis & Son, All Seasons, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Four heads, any variety:
1st, E. L. Lewis, Immensity, $3; 2d, E. L. Lewis, Defiance, $2; 3d, E. L. Lewis, Deacon, $1.
BEANS.—Half-peck of any variety:
1st, W. Whitman, $3; 2d, J. C. Stone, $2; 3d, A. E. Hartshorn, $1.
SQUASHES.—Summer, four specimens:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.

Gratuities:—

A. E. Hartshorn, Collection, $1.
A. Low, " $1.
J. C. Stone, " $1.
W. Heustis & Son, " $1.

JULY 25.

LETTUCE.—Four heads of any variety:
1st, E. L. Lewis, Immensity, $2; 2d, E. L. Lewis, Deacon, $1.
BEANS.—Half-peck of any variety:
1st, J. C. Stone, $3; 2d, W. Whitman, $2; 3d, J. Thorpe, $1.
PEAS.—Half-peck of any variety:
1st, A. Low, 999, $3; 2d, A. E. Hartshorn, Prodigious, $2; 3d, A. E. Hartshorn, Telephone, $1.
SWEET CORN.—Twelve ears:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, J. Thorpe, $1.

Gratuities:—

E. S. Converse, Melons, $2.
Col. C. H. Taylor, Potatoes, $1.
W. Heustis & Son, Tomatoes, $1.

AUGUST 1.

POTATOES.—Twelve specimens:
1st, W. J. Clemson, Early Rose, $3; 2d, E. L. Lewis, Early Rose, $2; 3d, A. Low, Early Fortune, $1.
SQUASHES.—Three specimens:
1st, A. E. Hartshorn, $3; 2d, W. Heustis & Son, $2.
SWEET CORN.—Twelve ears of any variety:
1st, A. E. Hartshorn, Crosby, $3; 2d, J. C. Stone, Crosby, $2; 3d, W. J. Clemson, Crosby, $1.
TOMATOES.—Twelve specimens:
1st, J. R. Comley, $3.

Gratuities:—

A. Low, Potatoes, $1.
S. K. Bayley, Chard, $1.
A. E. Hartshorn, Collection, $2.

AUGUST 8.

BEETS.—Twelve specimens:
1st, J. C. Stone, $3; 2d, E. L. Lewis, $2; 3d, J. Thorpe, $1
SQUASHES.—Three specimens of Marrow:
1st, A. E. Hartshorn, $3.
CABBAGES.—Three specimens:
1st, A. E. Hartshorn, Drumhead, $3; 2d, A. E. Hartshorn, Red, $2.
BEANS.—Two quarts, shelled:
1st, J. Thorpe, $3; 2d, W. J. Clemson, $2; 3d, A. E. Hartshorn, $1.

SWEET CORN.—Twelve ears:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, D. L. Fiske, $1.
TOMATOES.—Twelve specimens:
1st, J. C. Stone, Atlantic, $3; 2d, W. J. Clemson, Acme, $2; 3d, W. Heustis & Son, Earliana, $1.

Gratuities:—

W. Whitman, Beans, $1.
Aaron Low, Seedling Potatoes, $1.
E. L. Lewis, Collection, $1.

AUGUST 15.

CARROTS.— Twelve specimens:
1st, E. L. Lewis, Chamtenay, $3; 2d, E. L. Lewis, Danvers, $2; 3d, E. L. Lewis, Long Orange, $1.
PARSNIPS.—Twelve specimens:
1st, G. D. Moore, $3; 2d, E. L. Lewis, $2; 3d, E. Parker, $1.
ENDIVE.—Four specimens:
1st, W. J. Clemson, $3; 2d, E. Parker, $2; 3d, A. E. Hartshorn, $1.
SWEET CORN.—Twelve ears:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, J. Thorpe, $1.
TOMATOES.—Twelve specimens:
1st, J. C. Stone, Atlantic, $3; 2d, J. Thorpe, Atlantic, $2; 3d, J. Thorpe, Knowles' Early, $1.
EGG PLANT.—Four specimens of Round Purple:
1st, J. C. Stone, $3.

Gratuities:—

V. Buitta, Collection, $1.
Mrs. E. M. Gill, " $1.
A. E. Hartshorn, " $1.

AUGUST 22.

POTATOES.—Twelve specimens of any variety:
1st, W. J. Clemson, Early Rose, $3; 2d, E. L. Lewis, Clark's No. 1, $2; 3d, A. Low, Plymouth Rock, $1.
ONIONS.—Twelve specimens:
1st, E. L. Lewis, $3; 2d, W. J. Clemson, $2; 3d, J. B. Shurtleff, Jr., $1
MELONS.—Four specimens:
1st, A. E. Hartshorn, $3; 2d, G. D. Moore, $2.

CELERY.—Four roots of any variety:
1st, W. J. Clemson, $3; 2d, F. Tetlow, $2; 3d, W. Heustis & Son, $1.
LETTUCE.—Four heads:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, W. J. Clemson, $1.
BEANS.—Two quarts, shelled:
1st, A. E. Hartshorn, Horticultural, $3; 2d, J. Thorpe, Goddard, $2; 3d, J. Thorpe, Horticultural, $1.
SWEET CORN.—Twelve ears of any variety:
1st, A. E. Hartshorn, $3; 2d, J. C. Stone, $2; 3d, J. Thorpe, $1.
TOMATOES.—Twelve specimens:
1st, W. Lathrop, $3; 2d, J. C. Stone, $2; 3d, A. Nixon, $1.
PEPPERS.—Twelve specimens of any variety:
1st, E. L. Lewis, Ruby King, $3; 2d, E. L. Lewis, Chinese Giant, $2; 3d, E. L. Lewis, Squash, $1.

Gratuities:—

V. Buitta, Collection, $1.
A. E. Hartshorn, " $1.
A. Low, " $1.
W. Heustis & Son, " $1.
G. D. Moore, " $1.

AUGUST 29.

BEETS.—Twelve specimens:
1st, J. Thorpe, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, E. Parker, $1.
MELONS.—Four specimens:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2.
CABBAGES.—Three of any variety, trimmed:
1st, A. E. Hartshorn, Drumhead, $3; 2d, A. E. Hartshorn, Savoy, $2.
CAULIFLOWERS.—Four specimens:
1st. W. A. Teele, $3; 2d, E. R. Teele, $2.
CELERY.—Four roots:
1st, E. L. Lewis, $3; 2d, W. J. Clemson, $2; 3d, F. Tetlow, $1.
NATIVE MUSHROOMS.—Named collection:
1st, H. B. Grinnell, $3; 2d, Boston Mycological Club, $2.
TOMATOES.—Twelve specimens:
1st, J. C. Stone, $3; 2d, E. Parker, $2; 3d, J. Thorpe, $1.

Gratuities:—

W. Heustis & Son, Collection, $3.
V. Buitta, " $1.
E. L. Lewis, " $1.
A. Low, " $1.
A. E. Hartshorn, " $1.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS AND OCTOBER EXHIBITION OF FRUITS AND VEGETABLES (combined).

SEPTEMBER 24, 25, 26, 27. (*Changed from September 10-13, and October 3.*)

BEETS.—Twelve specimens:
1st, W. J. Clemson, $3; 2d, A. E. Hartshorn, $2; 3d, W. Heustis & Son, $1.

PARSNIPS.—Twelve specimens:
1st, W. W. Rawson, $3; 2d, G. D. Moore, $2; 3d, E. L. Lewis, $1.

POTATOES.—Twelve specimens of any variety:
1st, E. L. Lewis, Walter Raleigh, $3; 2d, H. R. Kinney, American Wonder, $2; 3d, E. L. Lewis, Clark's No. 1, $1.

SALSIFY.—Twelve specimens:
1st, G. D. Moore, $3.

MELONS.—Four specimens:
1st, A. E. Hartshorn, Emerald Gem, $3; 2d, A. E. Hartshorn, Arlington Nutmeg, $2; 3d, A. E. Hartshorn, Montreal, $1.

SQUASHES.—Three of any variety:
1st, A. E. Hartshorn, Golden Hubbard, $3; 2d, E. L. Lewis, Marrow, $2; 3d, W. Heustis & Son, Marrow, $1.

CABBAGES.—Three specimens of any variety:
1st, A. E. Hartshorn, Drumhead, $3; 2d, A. E. Hartshorn, Red, $2; 3d, E. L. Lewis, Drumhead, $1.

CAULIFLOWERS.—Four specimens:
1st, W. H. Teele, $3; 2d, DeSouza Bros., $2; 3d, E. R. Teele, $1.

LETTUCE.—Four heads of any variety:
1st, G. F. Fabyan, $3; 2d, W. W. Rawson, $2; 3d, A. E. Hartshorn, $1.

CELERY.—Four roots of any variety:
1st, A. Nixon, $3; 2d, E. L. Lewis, $2; 3d, E. Parker, $1.

BEANS.—Lima, two quarts:
1st, Mrs. E. M. Gill, $3; 2d, A. E. Hartshorn, $2; 3d, W. J. Clemson, $1.

SWEET CORN.—Twelve ears:
1st, A. E. Hartshorn, $3; 2d, G. F. Wheeler, $2; 3d, E. Parker, $1.

EGG PLANTS.—Four Round Purple:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.

TOMATOES.—Twelve specimens:
1st, J. Thorpe, $3; 2d, E. L. Lewis, $2; 3d, E. Parker, $1.

MARTYNIAS.—Twelve specimens:
1st, E. L. Lewis, $2; 2d, E. S. Converse, $1.

PEPPERS.—Twelve specimens of Squash:
1st, A. E. Hartshorn, $2; 2d, E. L. Lewis, $1.
Twelve of any other variety:
1st, E. L. Lewis, Ruby King, $2; 2d, A. E. Hartshorn, $1.
CARROTS.—Twelve Long Orange:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, H. W. Anderson, $1.
Twelve Intermediate:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, J. Thorpe, $1.
POTATOES.—Twelve Carman, No. 1:
1st, H. W. Anderson, $3; 2d, E. L. Lewis, $2; 3d, C. Scully, $1.
Twelve Early Fortune:
1st, C. Scully, $3; 2d, H. W. Anderson, $2.
Twelve Hebron:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, H. W. Anderson, $1.
Twelve Rose:
1st, H. R. Kinney, $3; 2d, C. Scully, $2; 3d, W. J. Clemson, $1.
Twelve of any other variety:
1st, C. Scully, $3; 2d, E. L. Lewis, $2; 3d, H. R. Kinney, $1.
TURNIPS.—Twelve Flat:
1st, J. Reed, $3; 2d, G. F. Wheeler, $2; 3d, C. S. Pratt, $1.
Twelve Swedish:
1st, Mrs. J. L. Gardner, $3; 2d, J. Thorpe, $2; 3d, W. H. Teele, $1.
ONIONS.—Twelve Danvers:
1st, J. B. Shurtleff, Jr., $3; 2d, W. H. Derby, $2; 3d, W. H. Teele, $1.
Twelve Red:
1st, A. E. Hartshorn, $3; 2d, W. H. Derby, $2; 3d, W. H. Teele, $1.
Twelve White:
1st, A. E. Hartshorn, $2.
SQUASHES.—Three Bay State:
1st, G. F. Wheeler, $3; 2d, E. L. Lewis, $2; 3d, W. Wheeler, $1.
Three Hubbard:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, G. F. Wheeler, $1.
Three Hybrid Turban:
1st, W. H. Derby, $3; 2d, G. F. Wheeler, $2; 3d, E. L. Lewis, $1.
Three Marrow:
1st, W. Heustis & Son, $3; 2d, J. C. Stone, $2; 3d, V. Frost, $1.
CUCUMBERS.—Pair of White Spine:
1st, J. Thorpe, $3.
Pair of any other variety:
1st, E. M. Bruce, $3; 2d, H. W. Anderson, $2.
MELONS.—Four specimens:
1st, A. E. Hartshorn, Montreal, $3; 2d, A. E. Hartshorn, Arlington Green Flesh, $2; 3d, A. E. Hartshorn, Salmon, $1.
CABBAGES.—Three Drumhead, trimmed:
1st, A. E. Hartshorn, $3.

Three Savoy:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, W. J. Clemson, $1.

CAULIFLOWERS.—Four specimens:
1st, W. H. Teele, $4; 2d, DeSouza Bros, $3; 3d, C. M. Handley, $2.

CELERY.—Four roots of Paris Golden:
1st, W. J. Clemson, $4; 2d, A. Nixon, $3; 3d, E. L. Lewis, $2.

Four roots of any other variety:
1st, E. L. Lewis, $4; 2d, W. J. Clemson, $3; 3d, A. Nixon, $2.

ENDIVE.—Four specimens:
1st, V. Buitta, $3; 2d, V. Buitta, $2; 3d, W. J. Clemson, $1.

LETTUCE.—Four heads:
1st, A. E. Hartshorn, $3; 2d, A. Nixon, $2; 3d, G. D. Moore, $1.

PARSLEY.—Two quarts:
1st, E. Parker, $2; 2d, A. E. Hartshorn, $1.

SWEET CORN.—Twelve ears:
1st, A. E. Hartshorn, $3; 2d, G. F. Wheeler, $2; 3d, E. Parker, $1.

EGG PLANTS.—Four Round Purple:
1st, J. C. Stone, $3; 2d, E. S. Converse, $2; 3d, H. R. Kinney, $1.

TOMATOES.—Twelve Aristocrat:
1st, J. Thorpe, $3; 2d, A. Nixon, $2; 3d, E. Parker, $1.

Twelve May's Favorite:
1st, A. Low, $3; 2d, W. Heustis & Son, $2.

Twelve Stone;
1st, A. Nixon, $3; 2d, W. J. Clemson, $2; 3d, J. Thorpe, $1.

Twelve of any other variety:
1st, E. L. Lewis, $3; 2d, A. Low, $2; 3d, J. Thorpe, $1.

PEPPERS.—Twelve Squash:
1st, A. E. Hartshorn, $3; 2d, A. Low, $2; 3d, E. L. Lewis, $1.

Twelve of any other variety:
1st, E. L. Lewis, Bull Nose, $3; 2d, E. L. Lewis, Ruby King, $2; 3d, A. E Hartshorn, Bull Nose, $1.

Gratuities:—

E. L. Lewis,	Collection,	$5.
W. Heustis & Son,	"	$5.
A. Low,	"	$5.
V. Buitta,	"	$3.
G. D. Moore,	"	$1.
H. W. Anderson,	"	$1.

CHRYSANTHEMUM EXHIBITION.

NOVEMBER 5, 6, 7, 8.

CELERY.—Eight roots, commercial grown:
1st, W. J. Clemson, Silver Medal; 2d, E. Parker, Bronze Medal.

PARSNIPS.—Twelve Hollow Crown:
1st, A. E. Hartshorn, $3; 2d, E. Parker, $2; 3d, E. L. Lewis, $1.
SALSIFY.—Twelve specimens:
1st, E. Parker, $3.
CUCUMBERS.—Pair:
1st, F. Pierce, $3; 2d, E. L. Dorr, $2.
CABBAGES.—Three Red, trimmed:
1st, E. L. Lewis, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.
Three Savoy, trimmed:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, J. Parker, $1.
BRUSSELS SPROUTS.—Half-peck:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, E. Parker, $1.
CAULIFLOWERS.—Four heads:
1st, C. M. Handley, $3.
CELERY.—Four roots:
1st, A. Nixon, $3; 2d, W. J. Clemson, $2; 3d, E. Parker, $1.
ENDIVE.—Four specimens:
1st, A. E. Hartshorn, $3; 2d, A. E. Hartshorn, $2; 3d, E. Parker, $1.
LETTUCE.—Four heads:
1st, E. Parker, $3; 2d, E. L. Dorr, $2; 3d, G. D. Moore, $1.
YELLOW CORN.—Twenty-five ears, traced:
1st, E. Parker, $3; 2d, E. M. Bruce, $2; 3d, C. Scully, $1.
TOMATOES.—Twelve specimens, grown under glass:
1st, Hittinger Bros., $3.

Gratuities:—

A. Nixon,	Collection,	$5.
E. L. Lewis,	"	$5.
A. E. Hartshorn,	"	$4.
W. Heustis & Son,	"	$4.
H. F. Gowell,	"	$1.
Goodell Farm,	"	$1.
J. C. Stone,	"	$1.

WARREN HOWARD HEUSTIS,
VARNUM FROST,
WALTER RUSSELL,
AARON LOW,
GEORGE D. MOORE,
JOSHUA C. STONE,
MICHAEL SULLIVAN.
} *Committee on Vegetables.*

Mrs. A. W. Blake's Estate, Brookline.

REPORT

OF THE

COMMITTEE ON GARDENS

FOR THE YEAR 1903.

By PATRICK NORTON, CHAIRMAN.

The Committee on Gardens has been called many times this year to view the successes of gardeners in their varied attempts to perfect the numerous estates on which they labor. How well they have succeeded is left for your committee to chronicle in this report of its observations. The estates inspected will be treated in the order in which they were visited and at the end of the report will be found a list of the awards made.

W. W. RAWSON'S CUCUMBER HOUSE, ARLINGTON.

The first visit was on May 13 to the market garden of W. W. Rawson at Arlington, to inspect a house devoted entirely to the growing of cucumbers. The house was four hundred fifty feet long by fifty feet wide and contained seven hundred vines planted in the ground. The vines were very healthy looking and heavily fruited. The fruit was of the White Spine variety and of longer size than ordinarily seen on vines in the open garden. Mr. Rawson's careful selection of seed is, in a measure, accountable for the fine quality of the product. In the particular house inspected (there were twenty others on the estate) the seed was planted January 20, set out in the greenhouse March 4, and picking began April 5. At the time of the visit eighty-seven boxes containing ninety cucumbers each were being marketed daily. The picking would last until July 1.

Mrs. A. W. Blake's Estate, Brookline.

On June 11 your committee was called upon to visit the estate of Mrs. A. W. Blake at Kernwood, Brookline. This consists of about fifty acres situated in the heart of this splendid town and is noted for having been in the family for a great number of years. The estate is cared for by Henry Wild and is in a most excellent condition; it is covered with fine specimens of trees, shrubs and flowers.

One of the rarest, hardy plants we noticed was a noble specimen of the climbing hydrangea which had attained great size and beauty. The central situation of this estate makes it a most desirable place of residence.

Goodell Farm, Wenham.

On June 13 the committee visited Goodell Farm at Wenham to inspect a strawberry garden. This consisted of about nine thousand square feet in matted beds and was very well fruited considering the adverse weather during the springtime. The attention of the committee was called to a chance seedling found by the manager of the farm growing on top of a gravelly knoll. It presented such a favorable appearance when discovered that he transplanted it to the farm and hopes to show the fruit the coming year at the Rose and Strawberry Exhibition. It is a very large berry something after the style of the Marshall and is named the Windmill after the estate on which it was found. The varieties cultivated on the Goodell Farm are the Gladstone, Minute Man, Sample, New York, Nick Ohmer, besides the Marshall and others. The committee's experience in growing large berries does not favor growing them in matted beds as the heavy foliage retains so much moisture that it is liable to rot the best berries on the plants.

Hadwen Park, Worcester.

The next visit was made on June 25 by invitation of the President of our Society, O. B. Hadwen, Esq., to inspect a large area of land which he has lately presented to the City of Worcester for park purposes. This tract of land comprises some fifty acres

Mrs. A. W. Blake's Estate, Brookline.

most of which is covered by a magnificent growth of forest trees, principally oak, chestnut, and pine. The land is remarkably well adapted for park purposes as the surface is so varied by ridges and valleys as to make a most attractive landscape. As one rides on the tops of these ridges the scene is constantly shifting and gives visitors delightful vistas up and down the valleys. The park is being constantly improved by the judicious planting of choice shrubbery and the clearing away of underbrush and fallen leaves, thereby giving the surface of the ground under the large trees a very clean, cool, and comfortable appearance.

This land borders for more than half a mile, upon Curtis' Pond thus adding a very pleasant feature to the landscape.

Worcester is fortunate in having a citizen of so much public spirit and generosity; and this gift of Mr. Hadwen's will always be appreciated and will be to all future generations, as well as the present, a "thing of beauty and a joy forever."

George D. Moore & Son's Vegetable Garden, Arlington.

The next visit this season was to the market garden of George D. Moore & Son at Arlington which occurred June 26. A house of cucumbers was the first to attract our attention. This house was two hundred twenty-five feet long by forty feet wide and contained four hundred fifty vines heavily fruited and in fine condition.

The variety was the White Spine and the vines were planted in the ground. We noticed that some of the finest specimens were reserved to ripen for seed and we commend this method of improving the quality of the product. The Moores are very successful in growing cucumbers and, in fact, everything else they undertake and they have no difficulty in disposing of their crops in the neighboring city, at remunerative prices. The vegetable farm of some fifteen acres was heavily cropped with the choicest beets, celery, beans, onions, cabbages, rhubarb, tomatoes, spinach, corn, salsify, parsnips, melons, and peas, presenting a fine appearance.

Miss E. Jackson Clark's Estate, Pomfret, Conn.

On July 9 the committee visited La Plaisance, the estate of Miss E. Jackson Clark at Pomfret, Connecticut, to inspect two graperies and an orchard house all under one roof, the extent of which is one hundred feet by twenty-six feet, divided into three equal sections. The grape houses contained nineteen and sixteen vines respectively which were heavily fruited with large and well-finished bunches of grapes. Some of the product of these grape houses was exhibited the present season by John Ash, the manager of the estate, at the exhibition of the American Pomological Society at Horticultural Hall, Boston, where it attracted a great deal of attention and received the Wilder Medal for excellence. The fruit house, or more properly called the orchard house, was a surprise to your committee as it contained a greater variety of fruit than we ever saw before under glass. This consisted in part of peaches in variety, pears, plums, apples, nectarines, figs, etc. and the trees were fairly well fruited and presented a healthy appearance. It will be of interest to add in this connection that the grapes, peaches, and nectarines were grown in twelve-inch pots while the apples and pears were in ten-inch pots. The melon house, a photograph of which is herewith reproduced, was also inspected. On account of the uncertainty attending the cultivation of the melon in the open, in this section of the country, the growing of them under glass is increasing.

By request of the committee Mr. Ash contributes to this report the accompanying notes upon his methods of cultivation.

La Plaisance, Estate of Miss E. J. Clark, Pomfret Centre, Conn., John Ash, Superintendent.

Culture of Fruit Trees in Pots.

It gives me great pleasure to give a few hints from my experience in the cultivation of fruit trees in pots. These can be procured either direct from England or through any reliable importer of fruit trees. Fruiting trees, imported late in the fall, will bear a full crop the following summer and in this way apples, pears, peaches, nectarines, cherries, grapes, apricots, etc. can easily and successfully be grown either in a house especially devoted to them or in peach houses, and later in the season, when more ventilation is given, in graperies. The temperature of a peach

La Plaisance: Residence of Miss E. Jackson Clark, Pomfret, Connecticut

Melon House of Miss E. Jackson Clark.

house suits hardy fruit trees admirably and you thus utilize to advantage space which otherwise would be producing nothing. When the trees are growing they can be fed liberally with liquid barnyard manure, until the fruits show signs of coloring, when nothing but clear water must be given and the trees allowed to become drier at the roots than they have been during the period of swelling their fruits, in order to insure flavor and sweetness. After the fruits have been gathered, the trees must be placed outside, standing the pots on boards, where they can get abundance of sunshine and natural outdoor conditions, in order to thoroughly ripen the wood, as on this treatment, of course, depends the success or failure of the next year's crop. The trees can be left outside until there is danger of frost breaking the pots, then move them into a cool greenhouse or a light, cool cellar, there to remain until needed for forcing. The trees should then be turned out of the pots, the drainage carefully examined and renewed where necessary; remove with a pointed stick a little of the outer soil from the ball, then put back into the pots and fill in with new soil in which has been mixed a quantity of bone, and your trees are ready for another season's product.

The following is a list of fruits grown at La Plaisance under glass:

APPLES.—Washington, Emperor Alexander, Peasgood's Nonsuch, Mother, Melon, Bismarck, Lady Henniker, Cox's Pomona, Mannington Pearmain, King of Tompkins County, Cox's Orange Pippin.

PEARS.—Buerre Hardy, Durandeau, Fondante d'Automne, Conference, Marie Louise, Pitmaston Duchesse, Doyenne du Comice.

CHERRIES.—Bigarreau Noir de Guben, Emperor Francis, White Bigarreau, Reine Hortense, Early Rivers.

PLUMS.—Early Transparent Gage, Oullin's Golden Gage, Grand Duke, Blue Rock, Coe's Golden Drop, Jefferson, Nonsuch, Belgian Purple.

PEACHES.—Gladstone, Dagmar, Thomas Rivers, Duchess of Cornwall, Hale's Early, Crawford's Early, Royal George, Princess of Wales, Alexander, Barrington, Dymond, Crimson Galande, Spencer.

NECTARINES.—Humbolt, Cardinal, Early Rivers, Lord Napier, Victoria, Downton, River's Orange, Pine Apple, Pitmaston Orange.

FIGS.—Bourjassotte Noire, Brown Ischia, Brown Turkey, Figue d'Or, Violette Sepor, White Marseilles.

GRAPES.—Diamond Jubilee, Black Hamburg, Canon Hall Muscat, Madresfield Court, Mrs. Pearson, Foster's Seedling, Buckland Sweetwater, Mrs. Pince, Alnwick Seedling, Muscat of Alexandria, Gros Maroc, Lady Down's Seedling, Gros Guillaume, Black Alicante.

Melons under Glass.

The varieties of melons grown under glass here last year, of which the accompanying photograph gives a partial view, were Frogmore Scarlet, Lord Derby, and Invincible Scarlet, principally. I also grew a few Rocky Ford and Emerald Gem, both of which did very well. The variety Lord Derby is thought very highly of here.

The melons succeeded a crop of tomatoes and were planted about May 1st in hills composed of good stiff loam, three feet apart, and a night temperature of 65° maintained, allowing the sun heat to run up to 90° with judicious ventilation.

As the plants grow and extend their roots, the spaces between the hills are filled in with good heavy loam in which is mixed a liberal portion of well-rotted cow manure. When watering the plants great care must be taken not to saturate the soil immediately around the stem of the melon as they are very apt to decay if any moisture lodges there. If any decay is noticed a little unslaked lime, powered fine, and put on carefully wherever any rotting appears will invariably stop it. The house above mentioned, which is thirty-three feet long by sixteen feet wide, produced over two hundred melons last year, the first fruits ripening about the first of July.

JOHN ASH.

MRS. J. C. WHITIN'S ESTATE, WHITINSVILLE.

The next visit occurred on August 17 when we were called to inspect a house of foreign grapes on the estate of Mrs. J. C. Whitin at Whitinsville, Massachusetts.

This house was furnished with nineteen vines of eight varieties of the very best kinds grown. The vines were filled to repletion with fine, large bunches of uniform size and presented a splendid appearance. The house was a credit to William McAllister, the manager of the estate, and was very much admired by the committee.

A. E. MONBLO'S GARDEN, MALDEN.

Our next visit was made September 3 to the village estate of A. E. Monblo at Malden to inspect a small area of the "India" raspberry growing in the garden. This fruit is quite new to your committee, although it was brought to this country a good many years ago. It is very attractive in appearance having glossy green foliage and a brilliant scarlet fruit of large size. The fruit is of a very mild flavor and can be eaten in all the various ways that other small fruits are, and is quite an acquisition to the amateur gardener. If some one will cross it with the Cuthbert raspberry to give it more flavor it will, doubtless, become an exceedingly valuable addition to the list of small fruits.

Mrs. J. C. Whitin's Estate, Whitinsville.

H. H. Rogers' Estate, Fairhaven.

On September 4 we visited the estate of Henry H. Rogers, Esq. at Fairhaven. This estate is entered for the H. H. Hunnewell Triennial Premium and this year completes the three years' entry. We were much pleased with the skill with which the gardener of the estate, James Garthley, has done his work and he deserves great credit for his taste in beautifying the place and in the massing of flowers and foliage plants and in making them grow so luxuriantly under such adverse conditions. The whole area of the estate was once a huge granite ledge which has been leveled off and covered with soil and a goodly number of acres reclaimed and made into a fine, soft lawn surrounded with a grand border of beautiful trees, shrubs, and flowers. The estate comprises about twenty-five acres and has been most judiciously handled by Mr. Garthley to make it a luxurious place in which to reside. We award this estate the H. H. Hunnewell Triennial Premium.

J. B. Lawrence's Dahlia Garden, Abington.

We visited on September 15 the dahlia garden of J. B. Lawrence at Abington. This garden contained about an acre of land fully covered with plants in full bloom and presented a very fine sight. The garden is replenished every year with the new varieties as they are brought out, thereby keeping up the enthusiasm of the growers and stimulating the interest of cultivators in this now popular flower.

W. P. Lothrop's Dahlia Farm, East Bridgewater.

The next visit occurred on September 29 when we visited W. P. Lothrop at East Bridgewater to view his dahlia farm. This consisted of four acres fully covered with fine plants in full bloom. Mr. Lothrop is an enthusiastic cultivator of this class of plants, procuring all the worthy, new kinds as they are introduced, thereby keeping his collection up to the times so that he can supply his customers every year with all the choicest varieties in cultivation.

The dahlia is easy to cultivate and by its free flowering, provided the soil is not too rich, well repays the small amount of labor required in attending to it.

Hon. E. S. Converse's Estate, Malden.

On November 3 we visited the fine, old homestead of Hon. E. S. Converse at Malden to inspect a chrysanthemum house arranged for effect with other decorative plants, and also a house of chrysanthemums planted on benches. The house arranged for effect was one hundred twenty feet long by twenty feet wide with a path down the center, on each side of which the plants were placed in a most artistic manner. Sixty-five very large plants, a large number of standards and small plants, and many decorative plants were used to fill in to make up a house of floral beauty not often seen on any estate. The skill with which the plants are made to obey the will of the artist gardener (David F. Roy in this case) rather than their own natural conditions is one of the wonders of horticulture and is achieved only through long experience and the taking of infinite pains by the enthusiastic gardener. The display in the house planted on benches was far ahead of anything your committee ever inspected. There were five hundred plants trained to one stem and flower embracing one hundred and seventy varieties of the very finest plants in cultivation. The variety of form and coloring was wonderful and beyond description and the effect was very beautiful. The citizens of Malden are fortunate in being allowed by Mr. Converse free access to this scene of beauty. On one day over seventeen hundred persons enjoyed this privilege much to their delight.

Edmund W. Converse's Estate, Newton.

On November 4 your committee visited the noble, old estate of Edmund W. Converse at Newton to inspect a house of chrysanthemums arranged for effect with other decorative plants. This house was not large, only fifty feet long by twenty feet wide, but it was filled with a goodly number of large and small plants arranged by the gardener, Robert Marshall, in a very

artistic manner. This being our first visit to this place, your committee was very much pleased with the cordial reception extended and with the general, grand appearance of the whole estate.

The Prizes and Gratuities awarded this year are as follows:

H. H. HUNNEWELL TRIENNIAL PREMIUM.

For an estate of not less than three acres, which shall be laid out with the most taste, planted most judiciously, and kept in the best order for three consecutive years:	
First, Henry H. Rogers	$160 00

SPECIAL PRIZES FROM THE JOHN A. LOWELL FUND.

For the best house of Chrysanthemums, arranged for effect with other plants:	
First, Hon. E. S. Converse	25 00
Second, Edmund W. Converse	10 00
For the best house of Chrysanthemums grown on benches:	
First, Hon. E. S. Converse	25 00

SPECIAL PRIZES OFFERED BY EDWARD HATCH.

For the best Fruit House, plants grown in pots or tubs included:	
First, Miss E. Jackson Clark	30 00

SOCIETY'S PRIZES.

For the best House of Foreign Grapes:	
First, Miss E. Jackson Clark	25 00
Second, Mrs. J. C. Whitin	10 00
For the best Strawberry Garden:	
First, the Goodell Farm	25 00
For the best Dahlia Garden:	
First, W. P. Lothrop	25 00
Second, J. B. Lawrence	10 00
For the best Vegetable Garden:	
First, George D. Moore & Son	25 00
For the best House of Cucumbers:	
First, Warren W. Rawson	25 00
Second, George D. Moore & Son	10.00

GRATUITIES.

O. B. Hadwen, for Hadwen Park $25 00
Mrs. A. W. Blake, for Estate 25 00
A. E. Monblo, for "India" Raspberry 10 00
Mrs. J. C. Whitin, for Estate, a Silver Gilt Medal.
David F. Roy, for Superior Cultivation of Chrysanthemums, a Silver Gilt Medal.
John Ash, for Superior Cultivation of a House of Fruits, a Silver Gilt Medal.

Respectfully submitted,

PATRICK NORTON,
ARTHUR H. FEWKES,
KENNETH FINLAYSON,
E. W. WOOD,
WARREN H. HEUSTIS,
J. H. WOODFORD,
HENRY W. WILSON,
J. WOODWARD MANNING.

Committee on Gardens.

REPORT

OF THE

Committee on School Gardens and Children's Herbariums.

FOR THE YEAR 1903.

By HENRY LINCOLN CLAPP, CHAIRMAN.

Weeding and watering in Spring.

Not only were the seeds given to the children who had gardens at school, but to those who had them at home, or to those who manifested interest enough in gardening to make a garden at home for the first time. This apparently insignificant gift of a few seeds furnished a motive far-reaching in its nature.

In the first place the seeds were from a celebrated place, Washington, the Capital of the United States. Each package had a stamp of high authority,—"U. S. Department of Agriculture." If on this account the seeds were imagined to possess

Weeding in the Autumn.

exceptional value. interest in them was increased. Secondly, they were the gift of a celebrated man, a Representative to Congress, who, no doubt, had heard of the children's garden work, and, in consequence, had kindly remembered them.

The pupils of the school for many years have been accustomed to write a composition regularly once a week on a subject that could be properly classed under one of the four following heads: experience, imagination, reproduction, letter. I suggested that

all the gardeners who had received seeds from Mr. Naphen should write him a letter of their experiences with the seeds. They did so. The following extracts from their letters attest the genuineness of their work and their enjoyment in it.

A reminder of Millett.

EXTRACTS FROM
PUPILS' LETTERS TO HON. HENRY F. NAPHEN.

MR. HENRY F. NAPHEN,
So. Boston, Mass.

DEAR SIR:

I thank you very much for the seeds you gave to us. When you sent them we were all delighted. Mr. Clapp gave us all one large package apiece which contained five small ones. Then he described them and told us how deep to plant them, after which we went out into the garden and planted them. We had a very nice time that afternoon. After that we were all watching to see who would have the first flower.—WM. WAUTERS.

DEAR SIR:

I received your seeds in the spring and had just enough to make a pretty garden. The school gardens looked very pretty this summer, and we regret very much that you did not come to see them.

In two corners of my garden I had chrysanthemums, and in the other two I had fleur-de-lis. Between the chrysanthemums I planted sweet peas, and between the fleur-de-lis I planted nasturtiums. I had a straight line down the centre in which I planted marigolds.

I took a great deal of pleasure in watching the flowers grow. I also planted lettuce, radishes, turnips, and carrots. Last Thursday I went out to the gardens and picked an armful of turnips and carrots, and another armful of chrysanthemums.—KATHERINE M. FINN.

Unfortunately of the different seeds I received and planted I had success with only two, sweet peas and nasturtiums. I also planted radish and lettuce seeds, lima beans, and a few dahlias, which all grew very well, as we had a very rainy summer. With constant care I went to my garden as often as I could I do believe that it did us as much benefit as could be expected. I sincerely regret that it is only one year that we have for garden study, because I surely know we should be more able to take care of it another year.—EDITH SIKORA.

Two years ago I had a garden which I was much interested in. The first thing I did was to take a fork and dig the earth up, then pick out the weeds and stones; then rake it over and get ready for planting. I did that in one lesson on Monday. During the week I planted seeds of radishes, nasturtiums, and lettuce.

The lettuce plants were the last to come up, but they were fine. In another week they were so near together that I had to separate them the same way as the radishes.

I kept my garden clean from weeds and in a few more weeks I had radishes for dinner. They were fine and rosy and they tasted better than they looked. The lettuce was nice and tender and I had a very successful garden.—FRANK E. WHITE.

The first thing that I did when I got out was to choose a garden. I chose one facing Dixwell Street that got a lot of sun and that had dark, damp soil.

Of course the first thing that I did was to weed my garden, and it was quite a hard thing to do because there were great big weeds, and their roots were so fast in the ground that it made big blisters on my hands to pull them up.

I came up a few times during vacation and watered my garden and took out the weeds. I was very sorry to lose it because I so enjoyed taking care of it.—PAULINE BIESENBACH.

It was last year when some of the pupils received a school garden from our schoolmaster. We went out in the month of October to loosen the

soil. After we got through we started to plant bulbs of different kinds. They were placed in circles, each containing one half-dozen.

The next spring they came up finely. Some pupils had tulips and others different kinds. Later on we received different kinds of seeds from Mr. Clapp. He told us to plant each kind in one straight line, which we all did. Afterwards we planted many kinds of vegetable seeds, and some did not come up right.

In vacation time we went up and weeded our gardens. After we came back to school we had so much to do that we didn't know where to start. Mr. Clapp told us that you were the man that gave us the seeds. Thank you.—WILLIAM FLOTOW.

I thank you kindly for your gift of seeds. I enjoyed planting them very much.

I think it is a very good idea that the girls and boys learn agriculture. One of the pleasantest afternoons was Monday, the time we went out gardening. I think I should enjoy having a little farm of my own.—EDITH MORAN.

One day last year Mr. Clapp, our principal, came into the room and asked who had gardens at home. Then he asked us what we had in our gardens. He picked out a number and told us to get our hats and go into the gardens and choose one for ourselves.

The gardens are quite large. They are about ten feet long and eight feet wide. There were a great many weeds to be pulled up, and to this task we set ourselves as soon as possible. Then we hoed up the ground to see that there were no roots or bulbs in it.

Then the seeds were given out, and I am sure we all thank you very much for sending us the seeds. Then the numbering of the packages came in this order: golden wave, Chinese pink, nasturtium, and sweet pea. I planted lettuce which did not come up at all, and radishes which came up finely. Mr. Clapp bought some Windsor beans and distributed them. When mine came up there were not enough beans for a mouthful, when cooked.—MINNIE NAGEL.

DEAR SIR:

I thank you very much for the seeds I received from you, and am pleased to say that they came up nicely. About half of my garden was planted with flowers, while the other half was planted with Windsor beans, radishes, and lettuce.

Whenever we came up from our gardens we always had some flowers. The girls picked a bunch and gave them to the teacher. The boys put them in their button holes. I am sorry that I have to lose my school garden.—BENNO BERNSTEIN.

My garden has a fine location, being sunny and also sometimes shady. I planted my seeds in circles, and with the exception of the sweet peas they came up in circles. But alas for the sweet peas! I waited and

waited for them, and to tell the truth, felt quite discouraged. But when they did come up, what then? Well, if every gardener had been blind I think he would have known my sweet peas were growing, I was so proud of them.

How we worked pulling the weeds! And you possibly couldn't imagine how pleased we were as we presented our first flowers to our teacher. When our principal or any visitors spoke in praise of our gardens how happy we looked! Yes, indeed, those seeds were the source of our pleasure. We shall always be grateful to you for them.—MAY G. MORSE.

When I first got my garden I had to weed it out, it was full of weeds and some of the weeds were so tall and so hard to pull up that I had to hoe them up.

The next difficult work was to hoe up the whole garden. It was full of stones and large rocks. When I got it all hoed up I had to rake it off, and at last I had it looking fine.

I planted some crocus, tulip, and snowdrop bulbs. One day in April I went out to see if any of my bulbs had come up, and to my surprise I saw six crocus blossoms and two of the sweet snowdrop blossoms. None of my tulips came up. I suppose that they got frozen during the winter.

In the summer I used to come and weed my garden out so that the weeds wouldn't kill the flowers or vegetables.

I got some beets, radishes, turnips, and carrots out of my garden, in which I took a deal of pleasure. I have a garden this year too.

I brought six dozen and a half bulbs to school to plant in my garden this year.—GRACE BOYD.

My garden had a row of nasturtiums in the southern portion; on the western side Windsor beans; on the north side nasturtiums; and on the eastern part a mixture of little clusters of sweet peas, nasturtiums, and marigolds. In the centre I had a large dahlia.

Through the summer I have made many enjoyable trips to my garden. Though it was situated in the sunny portion, and it was rather hot pulling weeds, after I was through it proved very pleasant to look upon.

We have had a frost and all the pretty little heads have bowed and fallen asleep, and those who want the tulips and crocuses in the spring are planting their bulbs now. I put a covering over my pansies and I expect I shall have blossoms in the spring.—THERESA DAY.

Last year I had a very pretty garden which I disliked to give up. We have only one year of gardening, which passes very quickly. I had many varieties of flowers, some of which are in bloom now. Some hot days it was quite tedious pulling up the weeds, but when the flowers sprung up it was a great repayment for the labor.

We had many pictures taken when the gardens were in bloom. Some were taken when we were hoeing, raking, weeding, or examining flowers.

I like gardening very much and I have one at home.—MARGUERITE ROULEAU.

toward concentration. Hereafter greater concentration must be wrestled with.

The effect of concentration is already shown by statistics to be dangerous to the welfare of Massachusetts and Boston especially, and the educational systems of the state and city should do something to counteract that effect.

Dr. William A. White, Superintendent of the Government Hospital for the Insane at Washington has found out, "as

Planting bulbs

clearly by the census of 1850 as by that of 1880, and it is confirmed by every census that has been taken," that Massachusetts has the largest amount of pauperism relatively to the population of all the United States, and that Boston is the centre of insanity as well as pauperism in the United States. "Where population is densest, the struggle for existence is keenest—the survival of the unfit is at work; and increased insane asylums and almshouse facilities become a necessity."

"The frontiersman who takes his family and goes west to open up new territory, *to engage in legitimate agricultural pursuits*, and

Again, to implant a love for horticulture in the hearts of children is of great importance to the horticultural societies for their maintenance and satisfactory progress. During the year 1903 thirty members of this society died. Recruits must be found to fill the places of the aged horticulturists removed by death. If the filling up of the ranks is left to chance or to the educational centers of the present type, the outlook for interest and advance steps in horticultural affairs is by no means promising.

If state boards of education and horticultural societies realize fully that the continued prosperity of this nation depends primarily on agriculture and secondarily on the mill, the mine, and the workshop, they should be manifesting it by some appropriate action. They admit the educative value of the workshop, but say little and do less concerning land culture, perhaps because united shopmen are so aggressive and farmers so retiring.

Dedham School Garden.

At the Oakdale School, East Dedham, about ten miles from Boston, there has been laid out by Mr. Fred H. Kennard, the landscape gardener, a model school garden which probably surpasses any other garden of the kind in this country. There is a botanical garden for native plants containing twenty-six beds, each four feet wide and eighteen feet long, where fifty-two children can dig, weed, water, and study. At the rear of the large lot is a kitchen garden with forty-eight beds, each four feet wide and twenty-two feet long. Ninety-six children can be given garden work there. Adjoining this garden is a small lot designed for a nursery where pupils are to be taught to prune, graft, and transplant small trees. One hundred eighty varieties of trees, shrubs, and vines have already been planted, and many more are to follow.

Children's Gardens in New York City.

At present DeWitt Clinton Park, in the centre of New York City, is a tract of barren land, except a small plot two hundred feet long and one hundred feet wide, which is used as a children's garden. Each garden is four by twelve feet and there are over two hundred of them. The boys and girls raise the ordinary

quick-growing vegetables—radishes, lettuce, peas, beans, onions, beets, turnips, carrots, endive, kale, as well as buckwheat, wheat, rye, and oats for materials to study in school.

Mrs. Parsons, the director, says it is easier to furnish an occasional farm plot than to maintain reformatories and prisons later on. A little house of one room has been built and two little housekeepers a day are appointed and taught how to keep things clean and orderly. In their zeal to keep things clean the children sometimes wash clean towels and the little pig "Clinty," and dust the roof.

This is a commendable educational center.

The Home Gardening Association.

The Home Gardening Association of Cleveland, Ohio, has done a great work in inducing school children to plant seeds and raise flowers in a barren and unattractive part of the city.

There were sold to the children at one cent a packet 116,489 packets of seeds, and in the fall 11,000 bulbs were sent to the school buildings. "Last year every room was brightened by these flowering bulbs. More yards have been cleaned up, more beautiful gardens are in evidence, and our city is showing the effect of seeds planted in 25,000 homes."

This work was begun in the spring of 1900, meetings have been held once a month during the winter and weekly during the summer, lectures on school gardens and floriculture illustrated with lantern slides have been given, and the desert has been made to blossom like the rose. Let others do likewise.

The Hartford School of Horticulture.

Whoever is interested in school gardens should secure the report of work done at this institution during the year of 1903. "The one hundred sixty-nine gardens, with the observation and fertilizer plots, together with the nursery and fruits, cover several acres of land. Twenty-two of the gardens belonged to adults, mostly teachers, twenty-seven to boys from the Watkinson Farm School, and one hundred twenty to boys and girls from the city."

The beds are of three sizes, 10x25, 10x30, and 10x40. This year only six free gardens were allowed to each school. The

the street their location seemed to be somewhat unfavorable to their survival. There was evidence of a great deal of work having been done. This garden received second prize from this Society.

The pupils of the school did some very interesting experimental gardening at their homes and other places, as shown by the enjoyable letters which they wrote to their principal and of which some are reproduced here.

The work has been started enthusiastically and successfully.

We are glad to include in this report Mr. Emerson's account of his garden and the use made of it.

COBBET GRAMMAR SCHOOL.

Philip Emerson, Principal.

LYNN, MASS., Oct. 19, 1903.

MR. HENRY L. CLAPP,
George Putnam School,

MY DEAR MR. CLAPP:

I send you herewith a statement of progress and plans for the Cobbet School gardens, as formal entry of specifications for the competition for school garden prizes for the current year.

We are expecting to complete the placing of soil for the wild garden strip beside the street fence before the school ere the frost stops work. In April, 1902, our yard was a waste of gravel and ashes, save for a few weeds and spears of grass. Now we have two strips of wild garden, about ninety and sixty feet in length and ten feet each in width. Over half is densely planted with wild shrubs, vines, herbs, and ferns. Only thirty feet is as yet unplanted. I herewith give a list of some two hundred thirty-one plants named in my Gray's Botany, which we have established on our grounds during the last year and a half. Many are represented by large clumps, like the panicled cornel, or by scattered specimens, like the New England aster. Some biennials may have to be re-established another spring. However, the list is a conservative statement, omitting all grasses, for instance, and weeds that were accidentally introduced and have not been labeled with the other plants. Some of the children have started wild gardens at home, and our labels suggest such common wild plants as will succeed best at home. Some plants have been set out by my boys at the primary schools they formerly attended.

Over five hundred square feet of space is planted with hardy garden perennials of many species and varieties, such as phlox, asters, lilies, Japanese anemones, bleeding heart, poppies, chrysanthemums, pentstemons, larkspurs, bell-flowers, peonies, and the like. Over one hundred

species and varieties in all. Several dozen children received roots of such hardy perennials as lily-of-the-valley and the pearl for home planting, and this work is to be extended another year.

Two beds and a long strip are devoted to spring and summer flowering bulbs, tulips, cannas, etc., and to a variety of the old-fashioned annuals. The pupils of several classes have grown such flowers in their home gardens.

A bed at the rear of the school was devoted to an economic garden. Cotton, tobacco, corn, peppers, sorghum, sugarcane, millets, sugar beet,

Making the garden.

and other roots, such as parsnip, alfalfa, cow peas, and other forage crop plants, etc., were grown in properly placarded plats. An exhibit was made at the Houghton Horticultural Society exhibition this fall of the products of this garden and those previously named, which secured the first prize, in competition with all other Lynn schools.

A vacant lot was secured for use by boys for individual vegetable gardens. Work was delayed through expectation that the lot would be sold. Finally it was opened in the middle of the drought. It had already been ploughed by a friend. It was divided into forty plots averaging one hundred fifty square feet in size, by the boys under the direction of the principal, and the plots were all assigned to girls and boys applying for

the privilege. The tough sods and stones were discouraging, and the lots of some boys with heavy home duties and living on the other side of the school district did not prove a success. In spite of the drought and the depredations of thieves others remained faithful and harvested crops from all seeds planted, their corn, vegetables, etc., being taken home and eaten. The coming year the work will be carried on at the school yard and at the children's homes, rather than on a vacant lot. Some forty dollars' worth of loam at eighty cents a double load have been delivered at the school, and will be used in the main for a long strip of school vegetable gardens. These are being prepared by eighth grade boys exclusively, and their gardening will run parallel to the fortnightly cooking school lesson of the eighth grade girls. Earnest and systematic effort will be made to have many pupils plant and care for a home garden of flowers and vegetables that shall be their very own. This was done systematically by only one entire room this year; though some pupils in other rooms took up the plan moved by the force of this example.

Our gardens are very new, indeed, and very far from what we intend to make them; but considering that even the soil for them had to be bought, and the holes for the soil picked out by main strength from the hard ashes and stones of the yard, the progress made since April, 1902, may, perhaps, be deemed worthy of some prize. If so, we shall highly prize the honor as a stimulus to all our pupils, and at once turn over the cash toward completing payment for the soil ordered for our vegetable gardens of another year.

I recall that you ask as to use made of school garden. The wild garden supplies material for nature study and for drawing lessons. The garden annuals and perennials are regularly drawn on for material for lessons in sketching, painting, and designing. Some of the exhibits testify to this. The gardens of economic plants supply illustrative material for the regular lessons in geography. For instance: wheat, barley, etc., which the children otherwise never see growing. The wild garden has the plants labeled with common name and brief descriptive remarks. The children observe their times and seasons and become familiar with their names. This proves a better plan than merely bringing picked flowers to the school rooms in connection with a calendar of flowers as they brought them in. However, the old ways are not discarded. They go on side by side with the yard garden, the one supplementing the other. Many citizens come to the garden to learn the names of wild flowers. For instance: one lady said she had a number of wild flowers that sprung up yearly at home from stocks her son transplanted years ago. She had not known their names until she learned them last spring at the school garden.

Yours very respectfully,

PHILIP EMERSON.

LETTERS ON PLANTING BY PUPILS OF THE COBBET SCHOOL, LYNN.

DEAR MR. EMERSON;

Prescott and I have a garden up to my father's farm in Saugus. We go up some nights after school and weed and water it. It is about twelve feet long by five feet. I planted most of it myself because Prescott was sick. I planted most of it on April 20, 1903. I had planted a little lettuce at home before in a box, and then I transplanted it.

We call our garden the "White Feather Farm." When I told my father the name he said we would have to call it the "Black Feather Farm" if it didn't rain soon. We each got the seeds for nothing, and we sell what we raise. So far we have made about sixty-five cents together. Our largest radish is about one-half inch in diameter. We sell them two bunches for five cents (six in a bunch). We sell the lettuce three cents apiece, or two for five cents. We sell to the neighbors and our own families. We have beets also in our garden.

My father said that if we would weed and pick his corn and potatoes he would give us some; and if we would do it to the peas he would pay us. We are going to do it. We have seven rows of lettuce about a foot apart, and a row and a half near together. We have two rows and a half of large radishes and two rows of small radishes. We have two rows of beets. We have more land left and can get more if we want it.

The way we water is a queer one. There is a long hose attached to the house. One of us goes up and turns on the water while the other fills the watering pots. Then we go and water. We do this several times. I must close now,

Yours sincerely,

PAUL B. JOHNSON.

This is the first year I ever tried planting vegetables, although they did very well. I planted my radishes April 13, and they were up April 20. In about a week after that they were so thick that I had to thin them out. This garden was in a box in the house.

I planted my outdoor garden about three weeks after this. I planted lettuce and radishes. Inside of two weeks they were up. They, too, grew very thick. The first I saw were two little leaves. Then as they grew other leaves forced their way up through the two first ones.

These (two) next leaves were very rough like a cat's tongue. The lettuce was the same at the start, but the first two leaves were larger.

Not long after this I pulled one up and saw that it had begun to form. Then in about a week I pulled another up and found that I had a radish.

I planted some sweet peas later and they are climbing up the wire very good.

Yours truly,

HARRY KANE.

My home garden is getting along very well. About the month of April I planted some radish seeds, but I didn't have very good luck with them, because my father said I planted them too deep. I got out of patience waiting for them to come up, until one day I saw one coming up. That was the only one that came up out of that crop.

After a while I got a bed made out of doors and planted more seeds. They came up and we had some to eat. I planted another crop a few days ago out of doors, they are all up about an inch now.

I expect to have some radishes before long.

Last Sunday morning I planted some seeds in my box. They have not come up yet, but I expect they will be up by tomorrow. My bed I have out of doors is about three feet by two and a half feet.

My box is about two feet by half a foot. I keep it out of doors side of my other garden. I am having the best luck with my garden out of doors.

Yours truly,

ETHEL LUFKIN.

April 20 I begun my home garden that I am going to tell you about. The first thing I got my box ready which was about two feet by one foot. This I filled full of sifted dirt which I got in a vacant lot. I brought it home and sifted it thoroughly. Then so much was ready.

The next evening I went down town and bought half a dozen packages of seeds. I planted two of these packages, which contained pansies and asters. In about a week they popped their little heads above the ground. They were so small that I pulled many of them up thinking they were weeds or small pieces of grass. Each of them was composed of two little leaves. Sometimes when I went to water them they would break and fall to the ground.

Now they are growing beautifully and the pansies look like little trees. The asters are all in a row and look strong and healthy. This is how they look so far, but they have to grow lots more before they will be able to bear blossoms.

I shall be very glad to write more and tell you about them when they bear blossoms. You will hear about them later.

Yours truly,

OLIVE G. M. PILLION.

I planted my garden the first of May. I planted beans in rows that were two and one-half yards long. I planted twelve rows. They are up now about two feet and in a few weeks will be ready to eat. I planted corn in ten rows three yards long and now it is up a foot. Monday I planted one dozen and a half tomato plants and they are coming up good. If you would like to, come down and see them some night.

Yours truly,

J. O'CALLAGHAN.

Report of the Director of the Children's Gardens, Groton, Mass.

By Miss Elizabeth Sewall Hill.

This garden was started in May, 1902, by the Village Improvement Association. Miss Louise Klein Miller was director until June; then Miss E. S. Hill took it for the rest of the year. It was located in the Lawrence Playground, one hundred feet by ninety-seven feet, and worked

Groton Children's Garden.

by ten boys; each individual garden being ten by ninety-seven feet. It was a great success.

This year we have twenty-five workers, besides the twelve at West Groton. The garden is three hundred feet by sixty feet; two hundred feet for the boys and one hundred feet behind the boys for the girls' part with a path between.

Four of the plats were very wet. I let some of the boys plant them as they pleased and they proved very good.

I had two plans, one for the boys and one for the girls. All planted the same thing at the same time. As fast as one crop was harvested another took its place; turnip, cabbage, or carrot taking the place of spinach Nearly all had two crops of lettuce, three of radish, two of peas, and spinach cut back several times.

It was not expected that these gardens would be equally good. Nineteen were almost perfect, while the others were not quite as good. There were many reasons for this; some were on newly ploughed land, others on old; some boys had last year's experience, others were new to the work; some were eighteen years old, others eight; the rain ran in rivers through some gardens, rotting and carrying away seed, so that planting in these was delayed. I am glad to say the rain did not dampen the ardor of the children, they came rain or shine, blow high or low. When it rained too hard we would flee to the tool house and I would give them a lecture on fertilizers, birds, insects, or some kindred subject. The mud was so deep and sticky I felt as if walking on snowshoes.

We came out of it all right and had beautiful days to work. One boy went home one night with his potatoes in a wheelbarrow and a large bunch of nasturtiums on top. It was all he could do to push it along, but he was a proud boy. Everyone stopped to see his treasures.

The gardeners were told just how and what to plant, then if they wished to experiment they could. For instance: some tried hilling potatoes, others tried open culture; some put the potatoes in with fertilizer, others covered the potatoes first. Then they compared notes.

The head of each row was placarded so it was known where everything was.

These two gardens cost the Village Improvement Society just sixty dollars for tools and salary of director for this year. The children paid for nothing; all they do is to work.

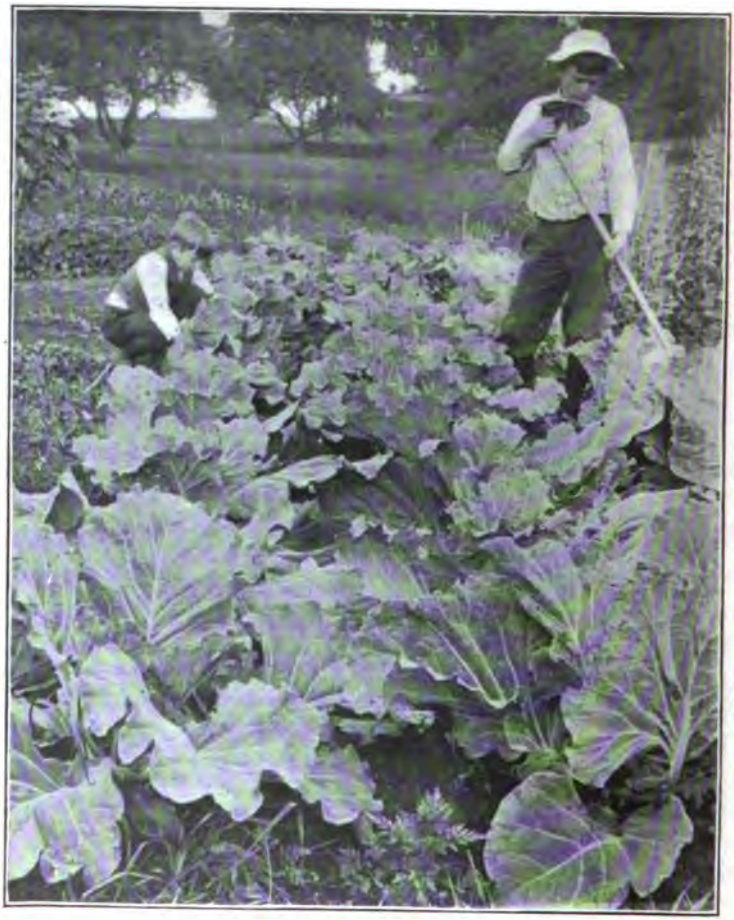
The judges met in the garden every month and gave marks for each garden. They were very strict, marking on the scale of one hundred, taking off ten for every fault. Weeds in paths, weeds in garden, too thick planting, vacant rows, rows out to edges, general appearance, etc., were marked. These marks grew better steadily, and at the last judging were excellent. Conduct also counted. If there was a tie between a boy who had behaved well and one who had not, the former would have the prize. The best gardens were worked by the best children. The steadiest and most punctual oftenest came out ahead.

The prizes were divided into three classes; for girls; for big boys; for small boys. Daniel Needham won the first prize of four dollars. He had a fine garden, although he had to plant his corn twice as it rotted on account of the dampness. Another boy had too much corn in his garden, so when this corn was two feet high Daniel transplanted sixteen hills, three stocks in each hill, and they all lived and bore fruit within a month.

The Farmers' and Mechanics' Club offered special prizes for the best display of vegetables, and of these D. Needham took the first ($3.00), Charles Morse, the second ($2.00), and Arthur Mason, the third ($1.00).

THE CHILDREN'S GARDENS AT WEST GROTON, MASS.

These gardens were started in May, 1903, by the Groton Village Improvement Association. The land was loaned by a citizen and is one hundred feet by fifty feet, and was divided among twelve workers. There are many more children who want gardens, and next year we will have



Results.

another one for girls. Thirty dollars were given by individuals; fertilizers and manure by farmers; and seed by the U. S. Agricultural Department, all but corn, beans, potatoes, turnips, and carrots, which I begged from storekeepers and farmers. A good many of the tomatoes were raised from seed and others were given.

The evening primroses were transplanted into the gardens. Our specialty is transplanting, and we have tried everything in the garden; sunflowers three feet high; corn two feet high; tomatoes, very large, with almost ripened fruit; squash, in fruit; turnips, parsnips, potatoes, and popples; and everything has lived.

The children have all their produce to sell, eat, or give away. One boy last year supplied his family with vegetables all summer, and I should say from all accounts, has done the same this summer. The lettuce in one boy's garden would have netted him three dollars, if sold. The radishes in one girl's garden two dollars, beets two dollars, besides beet greens. They more often give away than sell.

After Fourteen Years.

Fourteen years ago, to be exact, March 22, 1890, in a paper entitled, "Horticultural Education for Children," which I had the honor to read before this Society, I made use of these words: "If there is so great an advantage in the establishment and use of school gardens, why has the matter not been attended to by the school authorities? It is well known that the best educational impulses come from without,—from philanthropic individuals or institutions. We need not go outside of Boston for proof of this. The sewing schools, cooking schools, kindergarten and manual training schools, now corporate parts of our school system, were started and carried beyond the experimental stage by private individuals. Mrs. Shaw and Mrs. Hemenway looked farther into the future than the Boston School Committee."

We realize the correctness of this opinion better for our experience during the past fourteen years, during which time nearly all the important garden work for the benefit of children has been undertaken by philanthropic individuals and associations. The Massachusetts Horticultural Society, the Massachusetts Civic League, the Twentieth Century Club, the Home Gardening Association of Cleveland, Ohio, The National Cash Register Company, the Hartford School of Horticulture, the Hale House Farm at Watertown, the Commercial Club of Indianapolis, the Civic Improvement League of St. Louis, the Ohio Students' Union, the Milwaukee Outdoor Art and Improvement Association, the Groton Improvement Association, Mrs. Henry Parsons at DeWitt Clinton Park, New York, the Women's Auxiliary of the American Park and Outdoor Art Association, Mr. W. J. Stevens at

Carthage, Ohio, and others began and sustained the work in their respective localities, while the educational authorities applauded doubtfully, or shuddered at the apparition of this new thing which to them looked much like another fad.

But, at last, after years of earnest advocacy of garden work, an impression has been made on some school authorities. In the report of the American Park and Outdoor Art Association, we read "that school gardens are being started in connection with fifteen or twenty normal schools, that officers of ten or twelve agricultural colleges are preparing school garden plans and courses and otherwise coöperating in the work, and that departments of public instruction all over the United States are displaying much interest and activity in the school garden movement."

"In Vermont the State Normal School at Johnson maintains a half-acre experimental school garden in connection with the training school. A portion of the garden is devoted to coöperative flower and vegetable growing by the pupils in the lower grades, the remainder to a potato crop in charge of grammar grade pupils, each of whom has 'one long row to hoe.'"

Excellent garden work is carried on at the normal schools in Boston and Hyannis.

Proposed Work.

Educators and philanthropists are being impressed with the educative and civilizing nature of garden work, and intend to make extensive use of such work, as evidenced by their letters to me.

Mr. R. H. Cowley, inspector of public schools in Carleton County, Ottawa, writes: "I am to some extent supervising the inauguration of a school garden movement in Canada, and during the summer it is likely that a group of five school gardens will go into operation in each of the following provinces: Ontario, Quebec, Nova Scotia, New Brunswick, and Prince Edward Island. A specially trained travelling instructor will have charge of each group and spend one day per week at each garden."

This calls for five instructors and the establishment of twenty-five gardens. And what are Massachusetts and Boston doing to show an appreciation of such work? The State Board of Education has done nothing yet. Boston last year started garden work

in connection with summer schools in six grammar school districts, under the charge of one instructor, new to the work. Evidently the appropriation was scarcely munificent, since an application to have the George Putnam School garden taken care of during the summer vacation, met with no response. So the one who established it several years ago and has sustained it since hired a gardener to care for it during the long vacation.

Dr. Mary D. Hussey of East Orange, N. J., writes: "I am planning to start one (a school garden) here on several acres of land my father owns opposite a large public school attended mostly by well-to-do children. I know a good deal about gardening, but little about managing children." She says there are 3000 school children in the town. She has already brought the matter before the school board, and desires to work up the school garden and then present its merits to the civic leagues and improvement associations in the state.

Mr. William W. Woollen of Indianapolis, in the report of the American Park and Outdoor Art Association says: "I am seeking to establish a garden of birds and botany for the benefit of our schools. I have forty-four acres which will be deeded to the city for the use of the public schools. Fifteen acres can be devoted to gardening, and here I would like to have growing every hardy plant known in this country."

School Gardens Discussed.

Wherever teachers' conventions have been held, the school garden topic has come up. Sometimes a whole session has been devoted to its consideration as in the case of the American Park and Outdoor Art Association and the great National Education Association. I never before was so much impressed with the importance of the subject in the estimation of progressive educators as when President Eliot asked me to speak on that topic at the meeting of the latter association in Mechanics' Hall, July 8, 1903, when about two thousand educators and others were present and evidently much interested, since the evening was very warm and the open cars and the beaches promised a much more comfortable evening than one in a hall.

Two thousand persons interested in school gardens and school grounds! I regret that I could not use my ninety convincing

lantern slides, illustrating children really at work, not simply posing, in order to add to the interest in the talk and the reality of the work described. The "incidental remark," that pupils in the ninth grade in the George Putnam School during eight years had studied ferns delightedly and therefore successfully, led President Eliot to say, "That, ladies and gentlemen, is the entire philosophy of the new education."

Mrs. H. L. T. Wolcott.

Oct. 8, 1903, Mrs. Wolcott, one of the oldest, most enthusiastic, and most cherished members of our committee died. In 1878 she began her work of interesting children in growing plants, and from that time on to the period of her last illness she continued her efforts, in one form or another, to interest children in nature studies. She was instrumental in having appointed, in 1878, a Committee on Window Gardening, of which she was chairman as long as that committee existed, 1894, when a new direction was given to the work of interesting children in plant life; and, accordingly, there was appointed a new committee called the Committee on School Gardens and Children's Herbariums, of which she was chairman one year, and a member until she died, with the exception of one year when she was traveling in the South, California, and the Sandwich Islands.

She was acquainted with many of the leading botanists of the country, including Galloway, Halstead, W. T. Brigham, formerly botanist of the queen of the Sandwich Islands, and others; and wherever she went she sang the praises of her committee, circulated its reports, and continually directed the attention of interested people to the educational and charitable work of the Massachusetts Horticultural Society.

Her whole life seemed to be a charitable mission. The value of her work for destitute girls is beyond estimation. Always engaged in some uplifting work, intolerant of calumny, impatient with seemingly unappreciative and callous hearts, an outspoken opponent of any commercial tendencies in this Society, and an earnest advocate of every educational and philanthropical effort made by it, she held its standard to the highest eminence and reflected its credit the length and breadth of our country, and even to the isles of the sea.

Children's Herbariums.

The herbarium specimens exhibited by the children, November 27 and 28, 1903, more than doubled the number shown in 1902. The certainty of receiving a money prize for every specimen accepted by the committee may have had some influence in bringing out eleven hundred specimens, over sixty of which were not accepted on account of imperfections and poor mounting, probably the result of hasty preparation.

The many finely mounted specimens always to be seen at the exhibitions show what is expected by the committee, and leave no excuse for presenting a second time, specimens hastily collected, pressed and mounted. Indeed, some of the very finest work has been seen in first exhibits, notably those of Dorothy Metcalf, Dorothea Dudley and Christine Clapp, Austin W. Cheever, Olive L. and Marion L. French at the last exhibition, and Vanessa Denton, Lucy D. Ellis, Arthur E. French, and Arthur C. Faxon at previous exhibitions.

When the specimens are naturally small these exhibitors have mounted several on the same sheet, knowing that a specimen one or two inches high looks lonesome on an area of white paper 11½ by 16¼ inches. When they have thus placed four or five specimens on the same sheet, they have avoided a parallel position of the stems and made them radiate like the sticks of a fan. They have preserved all the natural curves of grasses and sedges, have been careful in choosing leaf sprays so as to present good forms on the mounting sheet, and have been remarkably successful in preserving the natural colors of blossoms. All this requires much painstaking, which is one of the objects of the committee in holding the exhibitions.

Only those who can remember the beginning of this work in 1891 can realize how great the improvement has been in regard to the points named above.

Never before in the history of the Society has there been exhibited so large and fine a collection of mosses and lichens. They presented an unusual opportunity to botanists to become acquainted with these comparatively little understood plants. Dr. Grout and other competent bryologists gave their valuable services in helping to name the rarer specimens.

These young girls, Christine and Dorothea Clapp, not yet beyond school age, have done a work quite scientific in character and one that would do credit to a professional botanist, bryologist, or lichenologist. Sixty-three different kinds of mosses, with a

Aster laevis: Geo. Putnam School wild garden.

smaller number of lichens, carefully chosen, especially in regard to fruit and vigorous growth, furnished a most valuable object lesson, especially to all those interested in such plants.

Mrs. P. D. Richards, whose fine exhibits of wild flowers and

mosses for a score of years have done so much to create and sustain an interest in such plants, came in on crutches in company with interested friends to see these fine collections, as it were to say, "How do you do?" to each old acquaintance and call it by name. If this illustration of the influence of mind over matter has nothing to do with the doctrine of Christian science, it certainly shows how strong and abiding an interest a person, man or woman, boy or girl, may have for some form of Nature's works; and that is reason enough for interesting children in such things. Nature's works furnish the greatest and purest refreshments to the spirits of man. There is no happier or more contented man than the naturalist.

Prizes and Gratuities Awarded for School Gardens and Children's Herbariums.

SCHOOL GARDENS.

George Putnam School, Roxbury, first prize	$15 00
Cobbet School, Lynn, second prize	12 00
Children's Gardens, Groton, third prize	10 00

CHILDREN'S HERBARIUMS, NOVEMBER 27 AND 28.

Austin W. Cheever, Mattapan, ferns and flowers,	$10 70
Dorothea Clapp, Dorchester, mosses,	7 50
Margaret Dow, Brookline,	7 00
Ruth Robinson, Watertown,	6 50
Dudley Clapp, Dorchester, leaf sprays,	5 25
Lois A. Leavitt, Ayer,	3 50
Richard Murdoch, Roxbury,	3 05
Christine D. Clapp, Dorchester, lichens,	2 50
Dorothy Metcalf, West Roxbury,	2 30
Marion L. French, Sudbury,	2 25
Olive L. French, Sudbury,	1 80
Joseph Murdoch, Roxbury,	1 75
Gladys Mason, Groton,	1 30
W. C. Swain, Roxbury,	60
Barbara Swain, Roxbury,	50
F. W. Swain, Roxbury,	45
C. D Swain, Roxbury,	25
D. W. Swain, Roxbury,	25
Total for Gardens and Herbariums,	$94 45

The amount of money appropriated by the Society for the use of the committee was:

For Prizes and Gratuities	$100 00	
For Current Expenses	50 00	$150 00
The Committee has expended		113 25
Balance unexpended		$36 75

HENRY L. CLAPP, *Chairman*, Roxbury,
MISS KATHARINE W. HUSTON, Roxbury,
WILLIAM P. RICH, Chelsea,
CHARLES W. JENKS, Bedford,
HENRY S. ADAMS, Boston,
W. E. C. RICH, *Secretary*,
99 Moreland Street, Roxbury, Mass.

Committee on School Gardens and Children's Herbariums.

REPORT

OF THE

COMMITTEE ON NATIVE PLANTS

FOR THE YEAR 1903.

By Charles W. Jenks, Chairman.

The Schedule was arranged as usual with prizes offered for native plants on five dates, for cultivated native plants on three dates, and for ferns on one date.

Your committee has been much disappointed in the number of collections shown; thirty-seven prizes were offered and for these only twelve exhibits were made.

We notice with regret the absence of several of our former contributors and as yet their places have not been filled. We are in doubt as to the reason of the decrease of exhibits, whether it has been caused by the less accessible location of the new hall, or by the decrease in the amount of the prizes offered, or the natural result that at intervals of a few years one set of exhibitors drop out and later their places are filled by others. We have thought best to reduce the number and increase the amount of the prizes for the ensuing year and hope to see again the old names and faces as well as new ones.

The exhibits were all of high quality, carefully named, and presented in good condition. They were creditable to the Society and the exhibitors and evidently appreciated by the visitors to the hall.

The usual number of rare and interesting specimens were shown; of these it seems desirable to record *Cnicus horridulus*

from Maine, shown by Edward S. Colburn, the first verified report of that species from the state.

No exhibits were made in the class of cultivated native plants and the former contributions of Miss Noyes and our late Secretary, Mr. Manning, were much missed.

The regular offer of the Society has been "To the exhibitor who gains three or more first prizes during the season, the Appleton Silver Medal"; "To the exhibitor who gains the next greatest number, the Appleton Bronze Medal"; Edward S. Colburn won three first prizes and is awarded the Silver Medal. Mrs. Arthur Clark won one first prize, one second, and one third; Miss Isabelle C. Shattuck won one first; your chairman is of the opinion that either a bronze medal should be awarded to both Mrs. Clark and Miss Shattuck, each having won one first prize, or that no bronze medal should be given as no single exhibitor gained the next greatest number; the others of the committee do not agree with me and think the medal should be given Mrs. Clark for having obtained three prizes while Miss Shattuck had only one. I can not myself see how this decision can be arrived at from the wording of the Schedule but as the majority vote of the committee has been in its favor the Appleton Bronze Medal is awarded Mrs. Arthur Clark. In the Schedule for 1904 we have endeavored to prevent a similar recurrence.

PRIZES AND GRATUITIES AWARDED FOR NATIVE PLANTS.

1903.

May 9.

Native Plants.—Collection of thirty bottles of named species and varieties, one bottle of each.

1st., Edward S. Colburn, $4.

June 6–7.

Native Plants.—Collection of thirty bottles of named species and varieties, one bottle of each:

1st., Mrs. Arthur Clark, $4; 2d, Mrs. W. S Eager, $3; 3d, Edward S. Colburn, $2; 4th, Miss Margaret Titcomb, $1.

JULY 11.

NATIVE PLANTS.—Gratuity for collection;
Edward S. Colburn, $2.

JULY 18.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:
1st, Miss Isabelle C. Shattuck, $4; 2d, Edward S. Colburn, $3; 3d, Mrs. Arthur Clark, $2.

JULY 25.

NATIVE FERNS.—Collection of named species and varieties:
1st, Chester C. Kingman, $5; 2d, Miss Isabelle C. Shattuck, $4; 3d, Misses E. A. and M. S. Doran, $3.
Gratuity.—William Whitman.
Display of ferns not entered for prize, $2.

AUGUST 8.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:
1st, Edward S. Colburn, $4; 2d, Mrs. Arthur Clark, $2.

SEPTEMBER 24.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:
1st, Edward S. Colburn, $4; 2d, Miss Mildred E. Bliss, $3.

Appleton silver medal, for gaining three first prizes during the season, awarded to Edward S. Colburn.

Appleton bronze medal, for gaining the next greatest number; awarded to Mrs. Arthur Clark.

Amount appropriated for the use of the committee		$125.00
Amount of Prizes,	49.00	
Amount of Gratuities,	4.00	
Cost of Medals,	10.05	63.05
Balance unexpended		61.95

CHARLES W. JENKS,
WILLIAM P. RICH,
MISS MARY RODMAN.
} *Committee on Native Plants.*

REPORT

OF THE

COMMITTEE ON FORESTRY AND ROADSIDE IMPROVEMENT

FOR THE YEAR 1903.

By James Sturgis Pray, Chairman.

To the President and Members of the Massachusetts Horticultural Society:—

The Committee on Forestry and Roadside Improvement respectfully report:

The principal work carried on by this committee has during the past year continued to be the gathering and arranging for ready reference and useful deduction all possible information with regard to the distribution, treatment and condition of the roadside trees of this Commonwealth "with a view to publishing a report of these conditions, coupled with recommendations to the tree wardens and others having to do with the preservation and increase of the arboreal beauty of our roadsides."

The collating, tabulating and mapping of the facts brought out in the replies to our widely distributed circular have now been completed. The arrangement of a considerable part of the information (that relating to work done, condition of trees, soils, diseases and pests, and effective ways in which they have been combated; different forms of tree-guards and their relative merits as shown by experience; injurious effects of electric wires, gas, and pavements; advertisement placards; noteworthy individual trees; real estate values as affected by planting or removal of roadside

trees; the celebration of Arbor Day; work in the schools; town by-laws relating to trees, etc.) was set forth in the last report of this committee, and its special value shown. The tabulating and mapping, however, of the records of distribution were not at that time completed. By these now completed tables, one can at a glance find the record, so far as our information goes, for any of the 81 species of trees listed in our circular in any one of the 353 cities and towns of the Commonwealth from which we have heard. That is to say whether the species grows in the given town wild or planted or both, whether in either case it is common, frequent, occasional, or rare, or whether it does well or not. In a series of outline maps, one for each species, the same information has been shown graphically in color.

It was hoped before the end of the year to have completed the detailed report upon all this valuable material. The present writer, however, upon whom the task devolved of draughting this detailed report has been unable, as yet, through pressure of other duties to give to the work the very considerable time its proper accomplishment will require. Moreover, although the amount of information is already great, and the replies are from towns well distributed over the state, nevertheless, a more complete response to certain of the inquiries set on foot by the committee is very much to be desired before it be attempted to publish a report embodying careful generalizations and deliberate recommendations. On the whole then the uncertainty of being able in the near future to give to the completing of this task, including the collection of further material and the draughting of the report, the time it will require, moves the writer to accompany this annual statement with all the material already in hand, leaving to the Society to carry the matter further or not, as it may see best. He believes that even in its present form it will be of service to members of the Society and others interested in our roadside trees, and he recommends that it be kept accessible in connection with the Society's library in such way as may be determined by the Librarian or the Library Committee. Should the writer later see his way clear to taking the matter up again with a reasonable prospect of completing the undertaking, if the Society has meanwhile made no other disposition of it, he will at such time come to the Society for the material. It should be

said moreover that in its present form the material has already been of service to, among others, the Massachusetts Highway Commission who have now undertaken to set out trees along the state highways, and it will, if kept accessible, continue to be of aid to them.

As has been true in previous years, a still more important work of the committee may fairly be said to have been the correspondence with tree wardens and others and helping them constantly with information and advice. In this work the committee has labored not only through the medium of correspondence as heretofore, but has given to tree wardens actual instruction on the ground in roadside thinning and pruning. Of the many cases this year of this individual help, one of the most noticeable was the aid given by this committee through one of its members, Mr. James H. Bowditch, to the tree warden of Weston. Mr. Bowditch visited Weston, made a very thorough investigation of the facts touching upon the then lively controversy between the tree warden, the Board of Selectmen, the County Commissioners, and the Newton Street Railway Company, and afterwards made a report which accomplished the saving of, among other good trees, two of the finest elms in the state, which would otherwise have been unnecessarily cut in the process of widening the boulevard through that town. This correspondence with tree wardens, which has during the last six years occupied so much of the time of the writer, may, he thinks, now very properly be left to the secretary of the Massachusetts Forestry Association, a salaried officer, one of whose special functions is to actively engage in such aid.

The committee has continued to distribute as occasion has offered the propaganda of the Society for the Protection of Native Plants and the American Park and Outdoor Art Association. It has further actively coöperated with the Massachusetts Forestry Association and the Appalachian Mountain Club in supporting the former's bills before the Massachusetts General Court providing for the appointment of a state forester and the better protection of forest lands; with the Society for the Protection of New Hampshire forests in its efforts to secure effective legislation looking to the eventual establishment of a forest reservation covering

the greater part of the White Mountain region; with the International Society of Arboriculture in its efforts to create wider spread interest and more active work in rational tree planting in different parts of the state and country; and with the Outdoor Art League of California in supporting the bill before Congress providing for the permanent preservation of the famous Calaveras Groves of Big Trees in California.

Respectfully submitted for the Committee,

JAMES STURGIS PRAY,
NATHANIEL S. SHALER,
HENRY S. HUNNEWELL,
JAMES H. BOWDITCH,
HARLAN P. KELSEY.

Committee on Forestry and Roadside Improvement.

REPORT

OF THE

COMMITTEE OF ARRANGEMENTS

FOR THE YEAR 1903.

By Joseph H. Woodford, Chairman.

The year just closing has been one of about the usual importance to our society and the exhibitions held during the season have been largely attended.

The halls have been arranged for the best accommodation of exhibitors and the public and we do not hear of any complaint from any source whatever.

We are very glad to chronicle the fact that fifty new folding tables have been constructed by our efficient janitor, Jackson E. Hall, of such good dimensions as to better accommodate exhibitors and not detract from the appearance of the halls when used.

At some of our large exhibitions we feel the need of additional glassware, and would suggest that the Treasurer consult with the janitor as to our needs and then proceed to supply the quantity required to make up the deficiency during this coming winter.

The fund placed to the credit of your committee for extraordinary expenses has been expended in such a manner as to redound to the best interests of the society.

We are glad to be able to express our appreciation of the manner in which the daily newspapers of the city have treated our exhibitions by liberal notices and photographic illustrations, and we sincerely hope that this custom may continue under the new management just being inaugurated by our society.

We are glad to be able to welcome new exhibitors to our exhibitions, thus filling up the gaps occasioned by the dropping out of some of the veteran exhibitors.

We append an account of the money received for entrance fees at the three exhibitions at which admittance was charged.

Spring Exhibition, March, ...	$637.75
Annual Flower Show, September, ...	631.75
Chrysanthemum Show, November, ...	788.00
	$2057.50

All of which is respectfully submitted.

JOSEPH H. WOODFORD,
WARREN H. HEUSTIS,
PATRICK NORTON,
ARTHUR H. FEWKES,
KENNETH FINLAYSON,
E. W. WOOD,
ROBERT FARQUHAR.

Committee of Arrangements.

REPORT OF DELEGATE

TO THE

STATE BOARD OF AGRICULTURE

FOR THE YEAR 1903.

Some changes have been made this year in the officers of the State Board of Agriculture. Hon. J. W. Stockwell, the Secretary, resigned, to take effect July 1, and J. Lewis Ellsworth of Worcester was elected to fill the position. Mr. Ellsworth seems well fitted for the place, being a practical cultivator of experience, of excellent executive ability, and a genial man making hosts of friends.

P. M. Harwood of Barre was elected general agent of the Dairy Bureau to succeed G. M. Whitaker of Boston. Mr. Harwood, having served as assistant to his predecessor, was well qualified for the position and I believe is giving general satisfaction.

The Winter meeting of the Board at Athol, December 1, 2, and 3 was a great success; it was one of the largest and most enthusiastic of its meetings.

The program which embraced subjects of practical interest to cultivators was as follows:

Progressive and Profitable Poultry Culture; by Prof. Arthur A. Brigham.

A Forest Policy for Massachusetts; by Dr. B. E. Fernow.

The Value of Art and Skill in Industry; by Hon. Carroll D. Wright.

Outlook for New England Agriculture; by Dr. George M. Twitchell, Editor of the Maine Farmer.

The Successful Type of Horse that may be profitably raised by New England Farmers; by Henry W. Smith.

The Manurial Problems in Soil Renovation and Improvement; by Dr. Homer J. Wheeler.

I would again call attention to the Hatch Experiment Station at Amherst and its work, particularly to the entomological department. Now that insect pests are so abundant it should be remembered that the professors at that institution are ready to answer inquiries for information. When it is considered how rapidly the San José scale is increasing in eastern Massachusetts it would be well for owners of small estates in this section to apply at once for remedies.

Winter is the time to destroy this pest.

WILLIAM H. SPOONER,
Delegate.

December 31, 1903.

REPORT

OF THE

COMMITTEE ON LECTURES AND PUBLICATION

FOR THE YEAR 1903.

By AARON LOW, CHAIRMAN.

The Committee on Lectures and Publication presents the following summary of its work for 1903.

A course of eight lectures has been delivered, as follows:

January 10. Remunerative Outdoor Occupations for Women. By Miss Mary E. Cutler.

January 17. Some Experiences and Observations in Berlin by a Massachusetts Farmer. By Benjamin P. Ware.

January 24. Systematic Pomology. By Prof. F. A. Waugh.

January 31. What the United States Department of Agriculture is doing for the Farmer. By Prof. C. S. Walker.

February 14. Characteristics of some Southern Trees (with stereopticon illustrations). By Miss Emma G. Cummings.

February 21. The Apple as a Money Crop for New England; Its Culture and Preparation for Market. By F. C. Richards.

February 28. The Demands on Agriculture in the Present Century; How shall we meet them? By Hon. J. W. Stockwell.

March 14. Parasitic Fungi of Field and Orchard. By Prof. L. R. Jones

The annual Schedule of Prizes was issued, as usual, in January and the following numbers of the Transactions have been published and distributed during the year.

1902, Part I, Issued February 16.
1897, " III, " " "
1902, " II, " July 6.
1903, " I, " " 7.

AARON LOW,
JAMES H. BOWDITCH,
E. W. WOOD.
Committee.

REPORT

OF THE

SECRETARY AND LIBRARIAN

FOR THE YEAR 1903.

The seventy-fourth year of the Society's existence has been marked by an interest well sustained in all the various departments of its work. There appear to be no lessening of devotion to the objects for which the institution was founded and no weakening in the active promotion of its aims. The experience of the past year indicates a renewed enthusiasm and a hopeful outlook for the future.

The various exhibitions have been, as usual, creditable to the Society and public interest has been fully up to the average of past years.

An important event of the year has been the unanimous adoption of a new system of government to go into effect January 1, 1904, superseding the present Constitution which in its main principles, at least, though with occasional revision and modification of details, has been the source of authority since 1835.

It is of interest to note that the new By-laws in which the management of the affairs of the Society is entrusted to a Board of Trustees, resembles in this respect the first constitution adopted in 1829.

The publications of the Society have been brought up to date during the year with the exception of the Accessions to the Library, issued as Part III of the Transactions. These are now

six years in arrears and the value of their continued publication is somewhat doubtful. The titles and dates of issue of the publications of the year are as follows:

January 3.	The Schedule of Exhibitions and prizes,	48	pages.
February 16.	Transactions, 1902, Part I,	110	"
" 16.	Transactions, 1897, Part III, containing the accessions to the library for that year,	57	"
July 6.	Transactions, 1902, Part II, with 23 plates,	200	"
" 7.	Transactions, 1903, Part I, with one plate,	156	"

Numerous specimens of fruits and flowers have been brought in for identification, all of which have received attention and, with the assistance at times of members of the fruit and flower committees, most of them have been satisfactorily named.

Concerning the library much might be said of its condition and needs which would be but a repetition of previous reports. Its claims upon the society and its value in its work are so apparent that confidence is assumed that it will be properly taken care of. The income of the John S. Farlow Fund ($100) and of the John D. Williams French Fund ($200) has been expended in the purchase of books, while the society's appropriation ($225) has been used for the maintenance of the periodical list and for binding.

On June 26 there was received from the family of the late Robert Manning a large number of books and pamphlets, among which were some desirable additions to the library, especially of numbers of serial publications and reports needed towards the completion of sets.

The preparation of a list of the duplicate material has been undertaken during the year and is nearly completed, thereby rendering accessible for sale or exchange a large number of publications which have been accumulating for years. By this means many additions to the library can economically be made.

In the absence of a report from the Library Committee a list of some of the more important accessions to the library during the year is appended.

BUDD. American Horticultural Manual. Parts I, II.
COGNIAUX ET GOOSENS. Dictionnaire Iconographique des Orchidées. Parts 48–50.
COLLINS, HOLDEN AND SETCHELL. Phycotheca Boreali-Americana. Fasc. 21, 22.
EARLE. A Third Pot-Pourri.
ELY. A Woman's Hardy Garden.
FERNOW. Economics of Forestry.
FLORA BATAVA. Parts 337–344.
FLORILEGIUM HARLEMENSE. Part 20, completing the work.
FOX. Tree Planting on Streets and Highways.
GALLOWAY. Commercial Violet Culture. 2d. Ed.
GOING. With the Trees.
HILLEBRAND. Flora of the Hawaiian Islands.
HOOKER. Journal of a Tour in Iceland in the Summer of 1809.
KEELER. Our Northern Shrubs and how to identify them.
LEAVITT. Outlines of Botany.
LEYLAND. Gardens Old and New. Vol. 2.
LOCKE. Outlines of Botany. Boston 1819.
LYON. Repulse Bay. London 1825.
MICHAEL. Führer für Pilzfreunde.
NEWELL. Irrigation.
NICHOLS. English Pleasure Gardens.
PARKHURST. Trees, Shrubs and Vines of the Northeastern United States.
RABENHORST. Kryptogamen-Flora von Deutschland, Osterreich, und der Schweiz. 2te Aufl. IV Band, III Abtheilung, Lief. 38, 39.
RAFINESQUE Atlantic Journal and Friend of Knowledge.
REICHENBACH. Icones Floræ Germanicæ et Helveticæ. Tom 22, Decas. 31–33, Tom. 24, Decas. 1, 2.
ROBINSON C. M. Improvement of Towns and Cities.
ROBINSON, WM. Alpine Flowers for Gardens. 3d Ed.
ROTH. A First Book of Forestry.
SARGENT. Trees and Shrubs, Vol. I. Parts 1, 2, 3.
SMALL. Flora of the Southeastern United States.
TRIGGS. Formal Gardens in England and Scotland. Part III. 72 Plates.
URBAN. Symbolæ Antillanæ. Vol. III. Fasc. II.
WARD. The American Carnation.
WATERS. Ferns; A Manual for the Northeastern States.
WAUGH. Systematic Pomology.
WEED. The Flower Beautiful.
WHITE. The Forest.
WOOD. Natal Plants, Vol. 3. Part IV.

WILLIAM P. RICH,
Secretary and Librarian.

Necrology — 1903.

Franklin Gordon Dexter was born in Boston, December 19, 1824, and died there January 1, 1903. He became a life member of the Massachusetts Horticultural Society in 1865.

Mr. Dexter was prominent in the business and financial circles of Boston for many years. He first went into business in Mr. Austin's counting rooms and later became associated with and was a partner of Wm. Appleton & Co., China merchants. In connection with this firm he made two or three voyages to China and was among the first Americans who went to Japan after the treaty with that country in 1858. On the death of Mr. Appleton in 1862 he became a partner in the firm of Samuel Hooper & Co., successors of Wm. Appleton & Co., remaining until the death of Mr. Hooper, about 1875, when the firm was dissolved.

He took an active part in the building of the Union Pacific Railroad and had interests in other Western railroads which were being built at that period. These interests he continued until a few years before his death when he gradually retired from active business.

Mr. Dexter was instrumental in introducing into this country from Japan several notable plants. He brought over in 1861, in a Ward case, by Ship "Nabob" from Shanghai, *Lilium auratum*, the Golden Banded lily of Japan, which had been collected by Dr. George W. Hall. Francis L. Lee received it and turned it over to Spooner and Parkman who propagated it and exhibited it at the Massachusetts Horticultural Society, July 12, 1862, receiving therefor a Silver Medal. C. M. Hovey recognized it as a new species and suggested for it the name *Lilium Dexteri*. In the meantime it had been introduced by Veitch into England and

flowered about the same time as the American plants and was promptly named *Lilium auratum* by Lindley, antedating Hovey's name by a few weeks only.

Mr. Dexter brought over at the same time *Lonicera Japonica*, the Japan honeysuckle, *Ampelopsis tricuspidata*, the Japanese or Boston ivy, and *Malus Halliana*, now commonly known as Parkman's Crab and which stood until two years ago in Mr. Parkman's garden.

Prof. C. S. Sargent states that the origin of this last species is still uncertain and that no other specimen has since been sent to the United States or Europe from Japan; all the plants now in culti ation having been propagated from the one brought home by Mr. Dexter.

Included in Mr. Dexter's importation were *Rhododendron brachycarpum*, still a very rare plant in gardens, *Retinispora pisifera aurea* (probably the first in this country), and a tree now in Prof. Sargent's possession, *Thuyopsis dolobrata*. This last had been introduced into England some two or three years earlier by an English naval officer.

Prof. Sargent also states that so far as he knows this was the first importation of plants made directly from Japan to the United States.

By Gordon Dexter.

Frederick L. Harris of Wellesley, Massachusetts, died January 11, 1903. He became a member of the Society in 1865.

A memorial of his life was published in the Transactions for 1903, Part I, page 24.

William Henry Sherman was born in East Cambridge, Massachusetts, July 29, 1841, and died in Boston, January 11, 1903. He became a life member of the Society in 1899.

Mr. Sherman was a business man of large interests and a member of the firm of Parker, Wilder & Company of which Marshall P. Wilder of horticultural fame was also a partner.

MRS. REBECCA CAROLINE AMES was born in St. Louis, Missouri, December 30, 1838, and died in Boston, January 21, 1903. She became a life member of the Society in 1899. Mrs. Ames was the wife of the late Frederick L. Ames of North Easton, whose interest in horticulture and in the Massachusetts Horticultural Society is still held in pleasant remembrance.

GARDINER G. HAMMOND was born in Boston, on Beacon Hill, now a part of the State House grounds, November 19, 1832, and died at his home on Beacon Street, Boston, March 3, 1903. He became a life member of the Society in 1864. Mr. Hammond was never in any business but lived on the income of his invested, inherited property. About 1860 he bought at New London, Connecticut, four miles from the town, and on the shore of Long Island Sound, the country place of a Mr. Williams, an old whaling merchant of that town. Here he passed his summers with his family for many years, living in the winter in Boston. From year to year up to 1868 he continued to buy parcels of land adjacent to his estate until he had acquired about 250 acres. While he lived at Walnut Grove Farm (the name of the New London place) he engaged extensively in farming of all kinds as a gentleman farmer. He had very fine fruit, flower, and vegetable gardens, cultivating the land highly. He also raised cows, horses, pigs, chickens, and dogs and planted extensively trees and shrubs.
By GARDINER G. HAMMOND.

BENJAMIN GREY was born in Ayton, Yorkshire, England, August 7, 1846, and died in Malden, Massachusetts, March 5, 1903. He became a life member of the Society in 1887. A memorial of his life was given in the TRANSACTIONS for 1903, Part I, page 161.

OLIVER R. ROBBINS was born in Roxbury, Massachusetts, April 19, 1830, and died in Weston, March 5, 1903. He became a member of this Society in 1886.

His family moved to Weston in 1832. Mr. Robbins served a term as selectman of the town and was an active member of the committee on the public library for many years. He carried on farming in its various branches, making a specialty of strawberry

culture, and took great pleasure in exhibiting his products at the horticultural exhibitions of the Society, winning many first prizes as a reward for his skill.

By Samuel H. Warren.

Oren H. Peck, formerly a resident of Melrose, Massachusetts, died in Denver, Colorado, April 2, 1903.

He became a member of the Society in 1866 and, during the years 1865 to 1870, was a frequent exhibitor of flowers at its exhibitions and was the recipient of numerous prizes attesting his skill and interest in horticultural work. He was a member of the Committee on Flowers in 1866, and in 1869 was awarded a First Class Certificate of Merit for four new varieties of *Coleus*.

Although his last years were spent in a distant state he always held a lively interest in the Massachusetts Horticultural Society and looked back with sincere pleasure upon the former years of active work in the Society.

Charles U. Cotting was born in Boston, May 13, 1831, and died there April 3, 1903. He became a member of the Society in 1896.

Seth Weston was born in Duxbury, Massachusetts, November 9, 1824, and died in Revere, April 5, 1903. He became a life member of the Society in 1870.

At an early age he learned the trade of a mason and coming to Boston in 1844 entered the employ of Standish & Woodbury, contractors and builders, where he remained for twenty years, the last twelve of which as a foreman.

In 1865 he formed a partnership with George F. Shephard, under the firm name of Weston & Shephard. This partnership lasted about twenty years, during which the firm erected many public and private buildings in Boston and vicinity, notably the Museum of Fine Arts in Copley Square and the residence of the late Frederick L. Ames on Commonwealth Avenue.

He moved to Revere about 1870 and after retiring from business devoted himself to his real estate interests and took an active part in the public affairs of the town for twenty years.

His interest in horticulture was his "play." He was a hard worker at his business and when he came home from the city he sought recreation in his garden and among his trees. He employed very little outside assistance in caring for his orchard, preferring to labor himself when he could. All of his trees he set out himself or personally supervised the work. He was most successful with pears, although he had a variety of apple, plum, peach, and cherry trees, besides a great many grape vines.

He was a frequent exhibitor of his products at the exhibitions of the Massachusetts Horticultural Society in the 70s and received many prizes. He experimented somewhat with strawberries and at one time had the largest bed of Sharpless strawberries in Revere. His first orchard was on Mill Street, Revere, and his last on Proctor Avenue where he lived for eighteen years. After he himself ceased to exhibit, he took great pleasure in attending the exhibitions at Horticultural Hall and at other places. Some twenty years ago he took several quite extended journeys, going as far south as Florida and west to the "Rockies", and retained to the last the memory of the vegetation as he saw it in the different localities.

As he loved fruit so he loved animals. In disposition he was retiring, never seeking prominence, though at various times he occupied prominent positions entirely unsought. He detested vice of all kinds and his contempt for a dishonest person was of a most positive character. In his generosity he frequently went almost without necessities himself in order to help some other person or some "good cause."

His affections were deep though not demonstrative and when he died he left five children to revere his memory, and a record of a stainless, upright, and useful life.

By F. Irving Weston.

William Sumner Appleton was born in Boston, January 11, 1840, and died there April 28, 1903. He became a life member of the Society in 1867.

He owned an estate of 360 acres in Newton, Massachusetts, and was much interested in the cultivation of fruits and vegetables and especially of trees for which he had a great regard.

Mr. Appleton was a student of genealogical, numismatic, and heraldric subjects and a recognized authority upon them.

Hon. Virgil Chase Gilman was born in Unity, New Hampshire, May 5, 1827, and died in Nashua, April 28, 1903. He was admitted a member of the Society in 1896. Mr. Gilman was educated in the public schools of Lowell, Massachusetts, and moved to Nashua in 1843 where he resided ever after.

In 1851 he began the manufacturing of cards and glazed paper, being among the first in this country in that business, and continued up to 1873 when, his health failing, he bought a farm which he carried on for five years following. He was then chosen treasurer of the Nashua Savings Bank and continued as such for the next twenty years. He was elected mayor of the City of Nashua in 1865, and in 1879 was sent to represent one of the largest wards of the city in the State Legislature, serving as chairman of the committee on education of that body. In 1881 he was chosen state senator and as such was made chairman of the committee on judiciary, serving also on three other committees.

Always interested in matters pertaining to horticulture and agriculture he was an early member of the New Hampshire Agricultural Society of which he was a trustee for many years. He served also as a trustee of the New England Agricultural Society at the time the Hon. George B. Loring was its president. For the last twenty years he has owned and carried on the Riverside Farm containing 145 acres and located within a mile and a half of the City Hall in Nashua and directly opposite the U. S. Fish Hatching Station, which last named institution was formerly a part of his farm. As a student of pomology he was considered by those interested in that subject as one of the best posted in New Hampshire. His special interest for the last ten years was in strawberries and at the time of his decease he had some fifty varieties under cultivation, and some for trial that have not yet been placed on the market.

By C. W. Hoitt.

Frank W. Andrews was born in Boston, October 16, 1826, and died in Washington, May 5, 1903. He became a life member of the Society in 1858.

Mr. Andrews always made Boston his home until about fifteen years ago when he moved to Washington, making that city his winter home. For nearly forty years he had his summer residence at Newport, Rhode Island. He was a member of the Massachusetts Agricultural Club and was interested in agricultural and horticultural matters.

WILLIAM BOWEN MURPHY was born in Cork, Ireland, May 12, 1854, and died in Boston, May 11, 1903. He became a life member of the Society in 1895. From early childhood he evinced a great love for the things of nature and, after a term of eight years in the army of the United States during which time he devoted his attention to the study of natural history, he took the complete course in botany at Harvard College. For some years thereafter he had charge of the Park Police of the City of Boston, still advancing his favorite study of plant life, and devoting every moment of his spare time thereto. While occupying this position he was awarded a medal by the Massachusetts Humane Society for saving the lives of three boys in the Back Bay Fens, May 29, 1892.

He was a frequent contributor to many of the Boston and New York newspapers, writing more frequently for the Boston Transcript. His articles written serially for the Roxbury Gazette during 1894 and 1895, as well as his articles in the Transcript on the Boston Park System and the Arnold Arboretum, received the highest encomiums. He had collected a rare assortment of pressed ferns and leaves from nearly all the public parks of Europe which attest more strongly than words his great interest in the principles and aims of the Massachusetts Horticultural Society.

By REV. P. B. MURPHY.

WILLIAM ELLIS ENDICOTT was born in Canton, Massachusetts, on the old Endicott place, April 1, 1842, and died at his home there June 3, 1903. He joined the Massachusetts Horticultural Society in 1871.

Mr. Endicott was well known among his fellow-members in the Society as a botanist and horticulturist. He cultivated in his

greenhouses at Canton many rare and interesting plants. He was especially interested in bulbous and tuberous-rooted plants and he grew extensively gladioli, dahlias, tulips, etc. He was a frequent exhibitor at the Society's flower shows and many visitors were attracted to his grounds by the brilliant displays of these flowers, year after year. He became a member of the Library Committee in 1874 and was elected chairman of that committee in 1879, holding the position continuously until the summer of 1902 when, on account of failing health, he resigned.

His practical and scientific knowledge of botany and horticulture and his familiarity with foreign languages, added to his marked literary tastes, well fitted him for this position. His reports as chairman give a very full history of the conditions and growth of the library for this period of twenty-three years.

A paper of great interest to all who consult this library was presented before the Society by Mr. Endicott on March 12, 1892. It is entitled "The Library of the Massachusetts Horticultural Society" and is to be found in the TRANSACTIONS for that year.

He instituted the valuable Card Catalogue of Plates which supplements Pritzel's Iconum Botanicarum Index and spent a great deal of his leisure time at home in verifying and correcting the cards. This catalogue was begun in 1882 and now numbers many thousands of cards. The Card Catalogue of Books, suggested in his annual report for 1887, was begun in 1888.

He also supervised the expenditure of the Stickney Fund for twenty of the thirty years of its existence. The annual income from this fund was seven hundred dollars, to be used solely for the purchase of books, and Mr. Endicott continually studied the catalogues of booksellers, of this and of foreign countries, that this money might be wisely expended and that no volume needed for the library should be overlooked.

Besides his horticultural interests, Mr. Endicott was for many years head master of the Christopher Gibson School in Dorchester, beginning before Dorchester was annexed to Boston and continuing in that position until his death.

He was also a member of the Tenth Massachusetts Battery Association, having served three years in the Civil War in his

early manhood. At the battle of Ream's Station he was taken prisoner and confined for six weeks in Libby Prison.

Mr. Endicott was always fond of a quiet home life, was a great reader and student, and his evenings were almost invariably spent among his books.

By Miss C. M. Endicott.

Warren E. Eaton was born in North Reading, Massachusetts, January 7, 1839, and died in Reading, July 3, 1903. He became a member of the Society in 1893.

Mr. Eaton was for thirty-six years principal of the Harvard School, Charlestown. His recreation was in historical and horticultural work and he prepared the greater part of the memorial history of Reading published on the occasion of the 250th anniversary of the town in 1894. He was also interested in and a member of the Sons of the American Revolution.

David Boardman Flint was born in Troy, New Hampshire, May 1, 1816, and died in Boston, July 5, 1903. He became a life member of the Society in 1869.

Mr. Flint came to Boston in 1839 and a few years after engaged in the lumber business in which he was very successful.

On retiring from active business pursuits in 1869 he devoted the remainder of his life to many interests of a philanthropic and charitable nature. He was especially interested in agricultural matters in the state and was a member of the Massachusetts Agricultural Club.

Albert H. Hews was born in Weston, Massachusetts, January 13, 1844, and died there July 8, 1903. He became a life member of the Society in 1868.

Mr. Hews was well known to the floriculturists of the country through his connection with the manufacture of pottery at Cambridge. The Hews Pottery was established in the town of Weston some time prior to 1765 and ever since has been carried on by some member of the family, Albert H. Hews being the fourth generation from the founder of the pottery.

Mr. Hews was much interested in horticulture and his love of nature was strong, qualities which served as an incentive in his

efforts to produce in his business the very best that could be made for the special requirements of all kinds of plants. His home in Weston was a spot where floriculturists loved to linger.

CHARLES JACKSON DAWSON was born in Jamaica Plain, Massachusetts, October 17, 1871, and died there September 15, 1903. He became a member of the Society in 1896.

Mr. Dawson was born and educated in an environment of plants and plant culture and continued through life closely connected with such work.

After leaving school he took a course of instruction at the Bussey Institution of Harvard University and was for some years connected with the Boston Park Department.

He was for several years secretary of the Gardeners' and Florists' Club of Boston. He had recently entered into the nursery business on his own account and his early death brings to a close a life of much promise.

MRS. CELENDA SMITH HATCH was born in Whitefield, Maine, July 21, 1833, and died in Cambridge, Massachusetts, September 25, 1903. She became a life member of the Society in 1895.

Mrs. Hatch was a lover of the beautiful in the floral kingdom and took great delight in the exhibitions of the Society.

CHARLES E. GRANT was born in Boston, August 26, 1814, and died in Lynn, October 1, 1903. He became a member of the Society in 1847, during the presidency of Samuel Walker, and was one of the very few living members of that period.

Mr. Grant was engaged in the paper hanging business on Union Street, Boston, for thirty years and on retiring served on the board of assessors for eight or nine years.

He lived for the greater part of his life in Roxbury, serving for two years as alderman before its annexation to Boston. He was also a representative to the Legislature in 1853. He was a skilful cultivator of grapes, peaches, plums, and small fruits and made many contributions of his products to the exhibitions of the Society taking many prizes therefor. Between the years 1846 and 1894, forty-eight years, he rarely failed to be represented at

the exhibitions, a record of continuous interest probably unequaled in the history of the Society.

MRS. HENRIETTA LOUISA TRACY WOLCOTT was born in Boston, September 25, 1825, and died in Brookline, October 8, 1903.

She became a member of the Society in 1876 and at once entered into its work with an activity and enthusiasm that ceased only with her death.

Many other educational and philanthropical interests were also the objects of her untiring devotion, large sympathies, and helpful services and have been spoken as a memorial of her elsewhere and need not be repeated here.

In the year 1878 Mrs. Wolcott with a few other interested persons started a movement in the Society for the purpose of encouraging a practical taste for floriculture among the children of the city. The object in view was "to promote a love for flowers and their culture among those who have little or no opportunity to grow them except in windows".

The Window Gardening Committee of which she was chairman during the whole period of its existence continued its work until 1894 when its title was changed to the Committee on School Gardens and Children's Herbariums and a broader field of work was outlined in which she ever retained an active and helpful interest, continuing a member of the committee until her death.

She was earnest in the advocacy of nature studies in the public schools and lived to note with great satisfaction the wide-spread interest in the school garden movement in which she was one of the pioneers in this country.

To those privileged to have known Mrs. Wolcott personally, to have enjoyed her entertaining and instructive conversation, and to have felt the inspiration of her cheerful presence, her death comes as a real bereavement, brightened however, by many pleasing reminiscences.

HON. JOHN EDWARDS RUSSELL was born in Greenfield, Massachusetts, January 20, 1834, and died in Leicester, October 28, 1903. He became a life member of the Society in 1881.

Mr. Russell was for many years a conspicuous personage in the business, political, and social life of his state and nation and a man of many and broad interests.

It is only, however, to the agricultural and horticultural side of his career that attention can be given in this memorial notice. His interest in these lines led him to accept the secretaryship of the Massachusetts State Board of Agriculture, a position to which he devoted much active and fruitful service in the years 1881 to 1887, filling the office to the great satisfaction of the farmers of the state. He was also a trustee of the State Agricultural College.

Himself practically interested in farming he took much pleasurable pride in his Leicester estate and in his horses, cattle, and sheep.

He was a man of lovable character as well as of business and political ability and one that adorned and elevated any undertaking into which he entered and he leaves a record of fruitful service in his day and generation.

William Henry White was born in Woburn, Massachusetts, October 26, 1829, and died in Pittsfield, New Hampshire, November 12, 1903. He became a member of the Society in 1890.

Mr. White was the senior member of the firm of White Brothers & Company, manufacturers of leather and had extensive factories in Lowell, Massachusetts, where he had resided since 1863. After having devoted the larger part of his life to business pursuits he retired in 1900 and engaged in fruit culture on an extensive scale in Pittsfield where he owned a farm of about one hundred acres. Here he set out 12,000 young trees, including the best known varieties of apples, as well as of plum and cherry trees. He had always a great interest in horticultural pursuits and was convinced that by the use of up-to-date methods it was possible to demonstrate that the farm lands of New Hampshire which were bringing in little or no revenue would be capable of returning a handsome profit on the investment.

He did not live to realize his expectations, as it will require five or six years to bring the trees to a growth sufficient to produce marketable quantities, but the enterprise will probably be continued by his sons.

By H. Kirke White.

GEORGE ORLANDO SMITH was born in Lexington, Massachusetts, January 5, 1832, and died at his temporary home in Somerville, November 16, 1903. He became a member of the Society in 1865.

Mr. Smith belonged to one of Lexington's old families and was one of the leading citizens of that historic town. He was greatly interested in and thoroughly informed as to its history and was one of the founders and a president of the Lexington Historical Society and also had been a selectman of the town.

He was much devoted to floriculture and had a fine garden at his Lexington home. He was especially interested in roses and at various times exhibited the products of his garden at the shows of the Society.

CHARLES W. GALLOUPE was born in Beverly, Massachusetts, September 5, 1825, and died in Boston, November 28, 1903. He became a life member of the Society in 1889.

Mr. Galloupe was actively engaged in business pursuits in Boston for many years.

He had a summer home in Swampscott with spacious grounds beautifully adorned with shrubbery and trees and, having a taste for horticulture, he took much pleasure in his greenhouses and gardens. In past years he frequently exhibited specimens of his cultivation at the Society's exhibitions.

AUGUSTUS FLAGG was born in Worcester, Massachusetts, January 17, 1818, and died in Boston, November 29, 1903. He become a life member of the Society in 1865.

Mr. Flagg was connected for nearly fifty years with the firm of Little, Brown & Company of Boston, publishers and booksellers. He owned a farm in Waltham and was much interested in horticultural and agricultural affairs.

PHILIP AUGUSTUS CHASE was born in Lynn, Massachusetts, November 14, 1834, and died in the same city, December 16, 1903. He became a member of the Society in 1894.

Mr. Chase was prominent in business and financial circles in Boston and Lynn, having been engaged in the leather business

and in shoe manufacturing in both cities. He was also active in public life and was especially interested in the subject of city parks and public reservations. He was a member of the Metropolitan Park Commission for several years, and was one of the trustees of Public Reservations, and chairman of the Lynn Park Commission. It was largely through his influence that the Lynn Woods and Revere Beach were secured for public pleasure grounds.

Ernst George Asmus was born in Hamburg, Germany, November 27, 1844, and died in West Hoboken, New Jersey, December 17, 1903. He became a life member of this Society in 1898.

From an humble beginning, with small capital, Mr. Asmus developed a large business in the growing of cut flowers, especially roses, carnations, and lilies of the valley. He achieved great success as a cultivator of roses, introducing to the trade the well-known varieties, Liberty, Souvenir du President Carnot, and Mme. Caroline Testout.

John R. Poor was born in Danvers, Massachusetts, in the year 1818, and died in Boston, December 18, 1903. He was a life member of this Society since 1859.

Mr. Poor was a prominent merchant of Boston, a member of the well-known firm of Stickney & Poor, dealers in spices.

He resided in the neighboring city of Somerville for many years, where he had a fine estate from which he often brought specimens of fruit to the exhibitions of the Society.

Moody Merrill was born in Campton, New Hampshire, June 27, 1836, and died in Silver City, New Mexico, December 24, 1903. He became a life member of the Society in 1889.

Mr. Merrill was largely interested in financial and real estate matters in Boston for the period between 1875 and 1885, especially in the development of what at the time were considered suburban properties. He established the once popular outdoor resort in Roxbury known as the Oakland Garden, but this as well as most of his other enterprises proved financially disastrous.

ISAAC GILBERT ROBBINS was born in Lynn, Massachusetts, November 26, 1835, and died in Cambridge, December 24, 1903. He became a life member of the Society in 1873.

WILLIAM DURANT was born in Boston, July 26, 1816, and died in the same city, December 31, 1903. He became a life member of the Society in 1864 and remained throughout the remainder of his life its constant friend and helper. Through the columns of the Boston Transcript, of which he was the business manager for sixty years, he rendered efficient and welcome service, always giving liberal space to the descriptions of the Society's exhibitions and to the reports of its business and educational meetings.

TREASURER'S REPORT

FOR THE YEAR 1903.

MASSACHUSETTS HORTICULTURAL SOCIETY, *in account current with*
CHARLES E. RICHARDSON, *December 31st, 1903.*

DR.

To amount paid for Furniture and Exhibition Ware . .			$476 65
" " " " Library, appropriated by Society	$225 00		
" " " from income of J. S. Farlow Fund	86 15		
" " " " income of J. D. Williams French Fund . . .	136 42		
		447 57	
" " " Interest on funds for prizes and other funds, credited opposite . .		2,074 72	
" " " for Heating	1,876 89		
" " " " Lighting	756 28		
" " " " Water Rates . . .	65 80		
" " " " Labor	1,778 88		
" " " " Stationery, Printing and Postage . . .	2,626 05		
" " " " Insurance	370 68		
" " " " Incidentals	691 06		
" " " " Repairs . . .	246 34		
" " " " Committee of Arrangements	225 00		
" " " " " " on School Gardens and Children's Herbariums . . .	18 80		
" " " " Committee on Lectures and Publications . .	200 00		
" " " " Committee on Forestry and Roadside Improvements	100 13		
Amounts carried forward	$8,955 91	$2,998 94	

Amounts brought forward	$8,955 91	$2,998 94
To amount paid for Salaries of Treasurer, Secretary and Assistants .	4,000 00	
" " " " Salaries of Committees .	895 00	
" " " " Tax on Real Estate in South Boston	139 12	
" " " " Electric Power . . .	175 10	
" " " " Legal Services . . .	50 00	
" " " to Aaron Low	100 00	
" " " for Decorations for American Pomological Society's Convention . . .	100 00	
		14,415 13
" " " " *Prizes awarded in 1902*, viz.:		
Prizes for Plants	1,959 35	
" " Flowers	1,832 42	
" " Fruit	1,525 60	
" " Vegetables	1,171 35	
" " Gardens and Greenhouses .	330 67	
" " Native Plants	93 52	
" " School Gardens and Children's Herbariums . . .	55 41	
H. H. Hunnewell, Triennial Prize . .	160 00	
" " Prizes for Rhododendrons	105 00	
Edward Hatch, special prize . . .	50 00	
		7,283 32
		$24,697 39
Balance of Cash December 31, 1903 . .		15,531 02
		$40,228 41

CR.

By Balance of account rendered December 31, 1902 . .		$17,648 55
Received from Building 1903, use of Halls,	$2,238 00	
" " Annual Exhibitions $2,057 50		
Less Expenses, 1,562 56		
	494 94	
" " Admissions and Assessments	1,038 00	
" " Mount Auburn Cemetery .	5,011 70	
" " State Bounty . . .	600 00	
Amounts carried forward	9,382 64	17,648 55

Amounts brought forward		$9,382 64	$17,648 55
Received from Sales of Transactions . .		34 25	
" " Interest on Bonds,	$9,700 00		
" " " " Stock,	1,112 00		
" " " " Deposit in Bank . .	226 25		
		11,038 25	
" " Miss Sarah B. Fay, for Special Prize . . .		50 00	
" Interest *credited following Funds charged opposite:*			
Samuel Appleton Fund .	$50 00		
John A. Lowell " .	50 00		
Theodore Lyman " .	550 00		
Josiah Bradlee " .	50 00		
Benjamin V. French " .	25 00		
H. H. Hunnewell " .	200 00		
W. J. Walker " .	117 72		
Levi Whitcomb " .	25 00		
Benjamin B. Davis " .	25 00		
Marshall P. Wilder " .	50 00		
John Lewis Russell " .	50 00		
Francis Brown Hayes " .	500 00		
Henry A. Gane " .	50 00		
John S. Farlow " .	100 00		
J. D. Williams French " .	200 00		
Benjamin H. Pierce " .	32 00		
		2,074 72	
			22,579 86
			$40,228 41

CHARLES E. RICHARDSON,
Treasurer.

Approved:

WALTER HUNNEWELL, } *Finance*
HENRY P. WALCOTT, } *Committee.*

ASSETS, DECEMBER 31st, 1903.

Real Estate		$516,172 36
Furniture and Exhibition Ware		8,727 19
Library		41,749 19
Stereotype Plates and Copies of History		246 50
Chicago, Burlington & Quincy R. R. Bonds	$1,000 00	
Kansas City, Clinton & Springfield R. R. Bonds	1,980 00	
Lake Shore & Michigan Southern R. R. Bonds	10,415 25	
City of Newton Bonds	24,228 75	
Atchison, Topeka & Santa Fe R. R. Bonds	44,693 25	
Chicago, Burlington & Quincy, "Nebraska Extension," R. R. Bonds	50,012 50	
Chicago & West Michigan R. R. Bonds	9,987 50	
Kansas City, Fort Scott & Memphis Consols	27,523 75	
Chicago, Burlington & Quincy, "Illinois Division," R. R. Bonds	51,625 00	
Boston & Maine, R. R. Bonds	8,710 00	
West End Street Railway Bonds	5,162 50	
General Electric Co. Stock	10,082 00	
		245,420 50
W. A. Hayes and A. P. Loring, Trustees		3,488 76
Cash		15,531 02
		$831,335 52

LIABILITIES.

Prize and other Funds invested in bonds and stock:

Samuel Appleton	Fund,	$1,000 00
John A. Lowell	"	1,000 00
Theodore Lyman	"	11,000 00
Josiah Bradlee	"	1,000 00
Benjamin V. French	"	500 00
H. H. Hunnewell	"	4,000 00
W. J. Walker	"	2,354 43
Levi Whitcomb	"	500 00
Benjamin B. Davis	"	500 00
Marshall P. Wilder	"	1,000 00
John Lewis Russell	"	1,000 00
Amount carried forward		23,854 43

Amount brought forward	$23,854 43		
Francis Brown Hayes "	10,000 00		
Henry A. Gane "	1,000 00		
John S. Farlow "	2,515 77		
J. D. Williams French "	5,063 87		
Benjamin H. Pierce "	800 00		
		$43,234 07	
Prizes awarded in 1903, payable in 1904		6,250 00	
Miss Sarah B. Fay, Special Prize .		50 00	
Kenneth Finlayson		60 00	
			$ 49,594 07
Surplus			781,741 45
			$831,335 52

Membership of the Massachusetts Horticultural Society, December 31st, 1903.

Life Membership per last report	694		
Added in 1903	18		
Reinstated	2		
Commuted from Annual	1		
		715	
Deceased		29	
			686
Annual Membership per last report	189		
Added in 1903	14		
		203	
Commuted to Life	1		
Deceased	10		
Resigned	5		
Dropped for non-payment of assessments for two years	5		
		21	
			182
Present Membership			868

INCOME FROM MEMBERSHIP.

18 New Life Members @ $30	$540 00
1 Reinstated	20 00
1 Commuted to Life @ $20	20 00
14 New Annuals @ $10	140 00
Assessments	318 00
	$1,038 00

CHAS. E. RICHARDSON,
Treasurer.

AUDITOR'S CERTIFICATE.

28 State Street, Boston, February, 1st, 1904.

To the Finance Committee of the
Massachusetts Horticultural Society,

Gentlemen:— Having completed my audit of the books and general accounting affairs of the *Massachusetts Horticultural Society* for the year which ended with the 31st day of December, 1903, I herewith hand you my report of the same.

Report.

I added the ledger, journal and cash book and the small books tributary to the cash book, and saw that all balances were correctly carried forward. I examined and found adequate the vouchers representing the disbursements during the year, and found the amount of cash required by the cash book upon the first day of January, 1904, to have been on hand. I also inspected the securities of the Society in the custody of the Treasurer and they were in all instances in accordance with the requirements of the records. I traced all postings from the journal and cash book into the ledger and proved the correctness of the balance sheet taken from the ledger as of the 31st day of December, 1903, which is a true statement of the financial condition of the Society upon said date, to the best of my knowledge and belief.

In short, I satisfied myself that the work in connection with the accounting affairs of the Society was being conscientiously and honestly performed, and that there was every evidence of fidelity upon the part of the Treasurer.

Very respectfully yours,

ANDREW STEWART,
Examiner of Accounts.

Dr. *Massachusetts Horticultural Society in account with the Proprietors of the Cemetery of Mount Auburn.* **Cr.**

For Sales and Improvements within the Cemetery for the year ending December 31st, 1903.

To cost of filling up and improving land at Mount Auburn for the year ending December 31st, 1903, the Massachusetts Horticultural Society being charged with their proportion of same:					
Rear of Walnut Avenue and Violet and Fern Paths.					
55.5 days, man . . .	$124 88				
16.7 days, horse . . .	62 63				
$\frac{3}{16}$ day, man and horse . .	1 57				
		$189 08			
Between Cherry and Magnolia Avenues.					
20.7 days, man . . .	$ 46 58				
77.2 days, man and horse .	289 50				
		$336 08			
Glen Avenue.					
16.4 days, man and horse . . .		61 50			
		$586 66			
One-fourth of $586.66 is			$ 146 67		
Balance due Mass. Horticultural Society . .			5,011 70		
			$5,158 37		

By Sales in January . . .			$1,153 75		
" " " February . . .			80 00		
" " " March . . .			986 00		
" " " April . . .			6,171 00		
" " " May			3,434 00		
" " " June			850 00		
" " " July			1,389 00		
" " " August . . .			237 50		
" " " September . .			2,115 00		
" " " October . . .			533 75		
" " " November . . .			2,616 50		
" " " December . . .			1,410 00		
			$20,976 50		
Net amount received from Receiving Tomb			1,259 00		
			$22,235 50		
Less graves repurchased	$ 40 00				
" lot "	162 00				
			202 00		
			$22,033 50		
Deduct for Annual Expenses .			1,400 00		
			$20,633 50		
One-fourth of $20,633.50 is					$5,158 37

E. and O. E.

BOSTON, December 31st, 1903.

JOHN L. DILL, *Treasurer.*

THE MASSACHUSETTS HORTICULTURAL SOCIETY
To the PROPRIETORS OF THE CEMETERY OF MOUNT AUBURN. *Dr.*

To cost of filling up and improving land at Mount Auburn for the year ending December 31st, 1903, the Massachusetts Horticultural Society being charged with their proportion of same.

Rear of Walnut Avenue and Violet and Fern Paths.

55.5 days, man	$124 88	
16.7 days, horse	62 63	
$\frac{3}{10}$ day, man and two horses	1 57	
		$189 08

Between Cherry and Magnolia Avenues.

20 7 days, man	$46 58	
77.2 days, man and horse	289 50	
		336 08

Glen Avenue.

16.4 days, man and horse	61 50
	$586 66
One-fourth of $586.66 is	$146 67

JAMES C. SCORGIE,
Supt. of Cemetery of Mt. Auburn.

BOSTON, December 31st, 1903.

I certify the foregoing to be a true copy of improvements for the year 1903 as rendered by the Superintendent.

JOHN L. DILL,
Treasurer.

Massachusetts Horticultural Society.

OFFICERS AND STANDING COMMITTEES FOR 1904.

President.

HENRY P. WALCOTT, M. D., OF CAMBRIDGE.

Vice-President. (for 2 years)

WALTER HUNNEWELL, OF BOSTON.

Vice-President. (for 1 year)

WARREN W. RAWSON, OF ARLINGTON.

Treasurer.

CHARLES E. RICHARDSON, OF BROOKLINE.

Secretary.

WILLIAM P. RICH, OF CHELSEA.*

Trustees. (for 3 years)

WILLIAM N. CRAIG, OF NORTH EASTON.
JOHN K. M. L. FARQUHAR, OF BOSTON.
CHARLES S. SARGENT, OF BROOKLINE.

Trustees. (for 2 years)

OAKES AMES, OF BOSTON.
ARTHUR H. FEWKES, OF NEWTON HIGHLANDS.
CHARLES W. PARKER, OF BOSTON.
WILLIAM H. SPOONER, OF JAMAICA PLAIN.

Trustees. (for 1 year)

ARTHUR F. ESTABROOK, OF BOSTON.
ROBERT T. JACKSON, OF CAMBRIDGE.
JOHN A. PETTIGREW, OF BOSTON.
MICHAEL SULLIVAN, OF REVERE.
ARTHUR D. HILL, OF BOSTON.

Nominating Committee.

WALTER C. BAYLIES, OF BOSTON.
WILLIAM H. ELLIOTT, OF BRIGHTON,
NATHANIEL T. KIDDER, OF MILTON.
RICHARD M. SALTONSTALL, OF BOSTON.
C. MINOT WELD, OF BOSTON.

*Communications to the Secretary, on the business of the Society, should be addressed to him at Horticultural Hall, Boston.

COMMITTEES FOR 1904.

Finance Committee.

WALTER HUNNEWELL, *Chairman.*
ARTHUR F. ESTABROOK, HENRY P. WALCOTT, M. D.

Committee on Prizes and Exhibitions.

J. K. M. L. FARQUHAR, *Chairman.*
W. N. CRAIG, A. H. FEWKES, W. W. RAWSON,
W. H. SPOONER, A. F. ESTABROOK.

Committee on Plants and Flowers.

ARTHUR H. FEWKES, *Chairman.*
WM. N. CRAIG, T. D. HATFIELD, ROBERT CAMERON,
JAMES WHEELER, WM. NICHOLSON, JOHN A. PETTIGREW.

Committee on Fruits.

E. W. WOOD *Chairman.*
CHARLES F. CURTIS, WARREN FENNO, J. WILLARD HILL, JOHN ASH

Committee on Vegetables.

MICHAEL SULLIVAN, *Chairman.*
WARREN H. HEUSTIS, AARON LOW, JOSHUA C. STONE,
WALTER RUSSELL.

Committee on Gardens.

CHARLES W. PARKER, *Chairman.*
DAVID F. ROY, JOHN A. PETTIGREW, W. W. RAWSON,
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Members and correspondents of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Information, or any clew to it, is especially desired in regard to Joseph Maxwell, *elected in* 1830, *and* George W. Smith, *elected in* 1851.

Hon. George S. Boutwell, Groton.

Clarence H. Clark, Ex-President of the Pennsylvania Horticultural Society, Philadelphia.

Joseph Jefferson, Buzzard's Bay.

Major L. A. Huguet-Latour, M. P., Montreal, Canada.

Sir Trevor Lawrence, President of the Royal Horticultural Society, London.

Joseph Maxwell, Rio Janeiro, Brazil.

Donald G. Mitchell, New Haven, Conn.

Baron R. Von Osten Sacken, Heidelberg, Germany.

Samuel B. Parsons, Flushing, N. Y.

Dr. Henry S. Pritchett, President of the Massachusetts Institute of Technology, Boston.

George W. Smith, Boston.

Albert Viger, President of the National Society of Horticulture of France, Paris.

Hon. James Wilson, Secretary of Agriculture, Washington, D. C.

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Information, or any clew to it, is especially desired in regard to Alexander Burton, *elected in* 1829; S. Reynolds, M.D., 1832; and Francis Summerest (or Summerer), 1833.

ÉDOUARD ANDRÉ, Editor-in-chief of the Revue Horticole, Paris, France.

GEORGE FRANCIS ATKINSON, Professor of Botany in Cornell University, Ithaca, N. Y.

PROFESSOR L. H. BAILEY, Director of College of Agriculture, Cornell University, Ithaca, N. Y.

JOHN GILBERT BAKER, F. R. S., F. L. S., Kew, England.

CHARLES BALTET, Président de la Société Horticole, Vigneronne, et Forestière de l' Aube, Troyes, France.

PETER BARR, London, England.

NAPOLEON BAUMANN, Bolwiller, Alsace.

D. W BEADLE, 307 Givens St., Toronto, Ontario.

PROFESSOR WILLIAM J. BEAL, Agricultural College, Michigan.

PROSPER J. BERCKMANS, Ex-President of the American Pomological Society, Augusta, Georgia.

CHARLES E. BESSEY, Ph. D., Professor of Botany in the Industrial College of the University of Nebraska, Lincoln.

DR CH BOLLE, Berlin, Prussia.

COL. GUSTAVUS B. BRACKETT, Pomologist to the United States Department of Agriculture, Washington, D. C.

PROFESSOR J. L. BUDD, Ames, Iowa.

F. W. BURBIDGE, M.A., Trinity College Botanic Garden, Dublin, Ireland.

ALEXANDER BURTON, United States Consul at Cadiz, Spain, Philadelphia.

REV. H. HONYWOOD D'OMBRAIN, Westwell Vicarage, Ashford, Kent, England.

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PARKER EARLE, President of the American Horticultural Society, Roswell, N. M.

GEORGE ELLWANGER, Rochester, N. Y.

H. J. ELWES, F. R. S., Colesborne, Cheltenham, England.

WILLIAM G. FARLOW, M.D., Professor of Cryptogamic Botany, Harvard University.

B. E. FERNOW, Forestry School, Cornell University, Ithaca, N. Y.

HON. ROBERT W. FURNAS, Ex-President of the Nebraska State Horticultural Society, Brownville.

BEVERLY T. GALLOWAY, Horticulturist and Superintendent of Gardens and Grounds of the United States Department of Agriculture, Washington, D.C.

CHARLES A. GOESSMANN, Ph.D., L.L.D., Chemist of the Hatch Experiment Station of the Massachusetts Agricultural College, Amherst.

GEORGE L. GOODALE, M.D., Professor of Botany, Harvard University, Cambridge.

HENRY H. GOODELL, President of the Massachusetts Agricultural College, Amherst.

OBADIAH B. HADWEN, President of the Worcester County Horticultural Society, Worcester.

PROFESSOR BYRON D. HALSTED, Botanist and Horticulturist at the New Jersey Agricultural Experiment Station, New Brunswick, N. J.

PROFESSOR CARL HANSEN, of the Royal College of Agriculture, Copenhagen, Denmark.

J. H. HART, Superintendent of the Botanic Garden, Trinidad.

DR. F. M. HEXAMER, Editor of the American Agriculturist, New York.

J. W. HOFFMANN, Colored State University, Orangeburg, S. C.

J. C. HOLDING, Ex-Treasurer and Secretary of the Cape of Good Hope Agricultural Society, Cape Town, Africa.

THE VERY REV. S. REYNOLDS HOLE, D.D., Dean of Rochester, Rochester, England.

SIR JOSEPH HOOKER, K.C.S.I., The Camp, Sunningdale, England.

JOSIAH HOOPES, West Chester, Pa.

SIR GEORGE KING, K.C.I.E., M.B., LL.D., F.R.S., Calcutta.

PROFESSOR WILLIAM R. LAZENBY, Department of Horticulture and Forestry; Secretary College of Agriculture and Domestic Science, Ohio State University, Columbus, O.

MAX LEICHTLIN, Baden-Baden, Germany.

VICTOR LEMOINE, Nancy, France.

DR. PETER MACOWAN, Government Botanist, Cape Town Herbarium, Cape Town, Africa.

DR. MAXWELL T. MASTERS, Editor of the Gardeners' Chronicle, London.

GEORGE MAW, Benthal, Kinley, Surrey, England.

T. C. MAXWELL, Geneva, N. Y.

F. W. MOORE, A.L S., Curator of the Royal Botanic Gardens, Glasnevin, Dublin, Ireland.

SIR DANIEL MORRIS, C.M.G., D.Sc., M.A., F.L.S., Imperial Commissioner of Agriculture, Barbados.

GEORGE NICHOLSON, Kew, England.

PETER NØVIK, Secretary of the Norwegian Horticultural Society, Christiana.

WILLIAM PAUL, Waltham Cross, London, N.

PROFESSOR D. P. PENHALLOW, Director of the Botanic Garden, Montreal, Canada.

P. T. QUINN, Newark, N. J.

CAVALIÈRE ENRICO, RAGUSA, Palermo, Sicily.

D. REDMOND, St. Nicholas, Florida

S. REYNOLDS, M.D., Schenectady, N. Y.

BENJAMIN LINCOLN ROBINSON, PH.D., Curator of the Gray Herbarium of Harvard University, Cambridge.

WILLIAM ROBINSON, Editor of Gardening Illustrated, London.

WILLIAM SALWAY, Superintendent of Spring Grove Cemetery. Cincinnati, O.

EDGAR SANDERS, Chicago, Ill.

WILLIAM R. SMITH, Superintendent of the Botanic Garden, Washington, D. C.

ROBERT W. STARR, Port William, N. S.

FRANCIS SUMMARELST,

WILLIAM TRELEASE, Director of the Missouri Botanic Garden, St. Louis.

DR. MELCHIOR TREUB, Director of the Botanic Garden, Buitenzorg, Java.

H. J. VEITCH, Chelsea, England.

WILLIAM WATSON, Curator of Royal Gardens, Kew, England.

PROFESSOR L. WITTMACK, Secretary of the Royal Prussian Horticultural Society, Berlin, Prussia.

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Members of the Society and all other persons who may know of deaths, changes in residence, or other circumstances showing that the following list is incorrect in any particular, will confer a favor by promptly communicating to the Secretary any needed corrections.

Information, or any clew to it, is especially desired in regard to members whose names are marked thus †.

Adams, Mrs. Charles Francis, South Lincoln.
Adams, Henry Saxton, Dorchester.
Alger, Rev. R. F., Dorchester.
Allen, Hon. Charles H., Lowell.
Allen, Thomas, Boston.
Ames, F. Lothrop, North Easton.
Ames, John S., North Easton.
Ames, Miss Mary S., North Easton.
Ames, Oakes, North Easton.
Ames, Oliver, North Easton.
Ames, Mrs. Oliver, Sr., North Easton.
Ames, Preston Adams, Washington, D. C.
Ames, Miss Susan E., North Easton.
Amory, C. W., Boston.
Amory, Frederick, Boston.
Anderson, Larz, Brookline.
Andrews, Charles L., Milton.
Andros, Milton, San Francisco, Cal.
Appleton, Francis H., Boston.
Arnold, Mrs. George Francis, Brookline.
Ash, John, Pomfret Centre, Conn.
Atkins, Edwin F., Belmont.
Ayer, James B., Boston.
Bailey, Jason S., West Roxbury.
Bailey, Robert M., Dedham.
Baker, Clifton P., Dedham.
Baker, James E., South Lincoln.
Ball, George H., Boston.
Banfield, Francis L., M. D., Worcester.
Barber, J. Wesley, Newton.
Barnard, James M., Boston.
Barnard, Robert M., Everett.
Barnes, Walter S., Boston.
†Barney, Levi C., Boston.
Barry, John Marshall, Boston.
Barry, William C., Rochester, N. Y.
Bartlett, Francis, Beverly.
Bartlett, Miss Mary F., Boston.
Bates, Miss Mary D., Ipswich.
Baylies, Walter C., Taunton.
Beal, Leander, Swampscott.
Becker, Frederick C., Cambridge.
Beckford, Daniel R., Jr., Dedham.
Beebe, E., Pierson, Boston.
Beebe, Franklin H., Boston.
Beebe, J. Arthur, Boston.
Bigelow, Albert S., Cohasset.

Bigelow, Joseph S., Cohasset.
Bigelow, Dr. William Sturgis, Boston.
Black, George N., Manchester.
Blake, Miss Anne, Brookline.
Blake, Mrs. Arthur W., Brookline.
Blake, Edward D., Boston.
Blake, Francis, Weston.
Blake, Frederick A., Rochdale.
Blanchard, John W., West Newton.
Bliss, William, Boston.
Boardman, Samuel M., Hyde Park.
Boardman, T. Dennie, Manchester.
Bolles, William P., M. D., Roxbury.
Bosler, Frank C., Carlisle, Penn.
Bowditch, Charles P., Jamaica Plain.
Bowditch, Ernest W., Milton.
Bowditch, James H., Brookline.
Bowditch, Nathaniel I., Framingham.
Bowditch, William E., Roxbury.
Bowker, William H., Boston.
Brackett, Cephas H., Brighton.
Breck, Joseph Francis, Allston.
Bremer, Mrs. John L., Manchester.
Bresee, Albert, Hubbardton, Vt.
Brewer, Francis W., Hingham.
Briggs, William S., Lincoln.
Brigham, William T., Honolulu, Hawaii.
Brooks, Henry, Lincoln.
Brooks, J. Henry, Boston.
Brooks, Lawrence, Groton.
Brooks, Peter C., Boston.
Brooks, Shepherd, Boston.
Brown, Alfred S., Jamaica Plain.
Brown, Edward J., Weston.
Brown, George Barnard, Brookline.
Brown, John M., Belmont.
Brown, Samuel N., Boston.
Burlen, William H., Boston.
Burnett, Harry, Southborough.
Burnham, John A., Wenham.
Buswell, Frank E., Brooklyn, N. Y.
Butler, Aaron, Wakefield.
Butler, Edward K., Jamaica Plain.

Cabot, Dr. Arthur T., Boston.
Cabot, George E., Boston.
Cains, William, South Boston.
Calder, Augustus P., Dorchester.
Cameron, Robert, Cambridge.
Campbell, Francis, Cambridge.
Capen, John, Boston.
Carlton, Samuel A., Boston.
Carr, Hon. John, Roxbury.
Carter, Charles N., Needham.
Carter, Miss Maria E., Woburn.
Cartwright, George, Dedham.
Casas, W. B. de las, Malden.
Chadbourne, Marshall W., East Watertown.
Chaffin, John C., Newton.
Chamberlain, Chauncy W., Boston.
Chapman, John L., Hingham.
Chase, Daniel E., Somerville.
Cheney, Mrs. Elizabeth S., Wellesley.
Choate, Charles F., Southborough.
Christie, William, Everett.
Claffin, Hon. William, Newtonville.
Clapp, Edward B., South Boston.
Clapp, James H., South Boston.
Clapp, William C., South Boston.
Clark, Benjamin C., Boston.

Clark, B. Preston, Cohasset.
Clark, Miss Eleanor J., Pomfret Centre, Conn.
Clark, J. Warren, Millis.
Clarke, Miss Cora H., Boston.
Clarke, Eliot C., Boston.
Clough, Micajah Pratt, Lynn.
Cobb, John C., Milton.
Coburn, Isaac E., Everett.
Codman, James M., Brookline.
Codman, Ogden, South Lincoln.
Coe, Miss Mary Alma, Boston.
Coffin, Abraham B., Winchester.
Cogswell, Edward R., Jr., Cambridge.
Cole, Edward E., Boston.
Collamore, Miss Helen, Boston.
Colton, Samuel H., Worcester.
Comley, Norris F., Lexington.
Converse, Elisha S., Malden.
Converse, Col. H. E., Malden.
Coolidge, Harold J., Boston.
Coolidge, Joshua, Mount Auburn.
Coolidge, J. Randolph, Chestnut Hill.
Coolidge, Mrs. J. Randolph, Chestnut Hill.
Coolidge, T. Jefferson, Jr., Boston.
Cottle, Henry C., Boston.
Cox, Thomas A., Dorchester.
Coy, Samuel I., Boston.
Craig, William Nicol, North Easton.
Crane, Zenas, Dalton.
Crawford, Dr. Sarah M., Roxbury.
Crocker, Hon. George G., Boston.
Crocker, Miss S. H., Boston.
Crosby, George E., West Medford.
Cross, Alfred Richard, Nantasket.
Crowell, Randall H., Watertown.
Curtis, Charles F., Jamaica Plain.
Curtis, Charles P., Swampscott.
Curtis, Charles P., Jr., Boston.
Cushing, Livingston, Weston.
Cushing, Robert M., Boston.
Cutler, Judge Samuel R., Revere.
Cutting, Gen. Walter, Pittsfield.

†Daggett, Henry C., Boston.
Dalton, Charles H., Beverly.
Daly, John C., Roxbury.
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Dana, Charles B., Wellesley.
Daniels, Dr. Edwin A., Boston.
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Davenport, George E., Medford.
Davis, Arthur E., Wellesley.
Davis, Mrs. Arthur E., Wellesley.
Davis, Edward L., Worcester.
Davis, L. Shannon, Brookline.
Dawson, Jackson T., Jamaica Plain.
Dee, Thomas W., Cambridge.
Denny, Clarence H., Boston.
Denton, Eben, Dorchester.
Dexter, George, Beverly.
Dike, Charles C., Stoneham.
Doane, Edgar Howard, Wenham.
Doliber, Thomas, Brookline.
Donald, William, Cold Spring Harbor, N. Y.
Donaldson, James, Roxbury.
Dorr, George, Dorchester.
Dove, George W. W., Andover.
Dowse, William B. H., West Newton.
Draper, Hon. Eben S., Hopedale.
Draper, George A., Hopedale.
Dreer, William F., Philadelphia. Pa.
Dumaresq, Herbert, Chestnut Hill.
Duncan, James L., New York, N. Y.

Dunlap, James H., Nashua N. H.
Durfee, George B., Fall River.
Dutcher, Frank J., Hopedale.
Dwight, Theodore F., Kendal Green.
Dyer, Herbert H., Cambridge.

Eaton, Horace, Cambridge.
Edgar, William W., Waverley.
Eldredge, H. Fisher, Boston.
Elliot, Mrs. John W., Boston.
Elliott, William H., Brighton.
Ellsworth, J. Lewis, Worcester.
Endicott, William, Boston.
Endicott, William, Jr., Boston.
Endicott, William C., Jr., Danvers.
Estabrook, Arthur F., Boston.
Ewell, Warren, Dorchester.
Fabyan, George F., Brookline.
Fairchild, Charles, New York, N. Y.
Falconer, William, Pittsburg, Pa.
Farlow, Lewis H., Cambridge.
Farnsworth, Mrs. William, Dedham.
Farquhar, James F. M., Roslindale.
Farquhar, John K. M. L., Roxbury.
Farquhar, Robert, North Cambridge.
Faxon, John, Quincy.
Fay, H. H., Woods Hole.
Fay, Joseph S., Jr., Woods Hole.
Fenno, L. Carteret, Boston.
Fessenden, George B., Allston.
Fewkes, Arthur H., Newton Highlands.
Finlayson, Kenneth, Brookline.
Fisher, Peter, Ellis.
Fletcher, George V., Belmont.
Fletcher, J. Henry, Belmont.
Fletcher, John W., Chelsea.
Foster, Charles H. W., Brookline.
Foster, Francis C., Cambridge.
Fottler, John, Jr., Dorchester.
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French, S. Waldo, Jamaica Plain.
French, W. Clifford, Newton.
Frohock, Roscoe R., Malden.
Frost, Harold L., Arlington.
Frost, Irving B., Belmont.
Frost, Varnum, Arlington.

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Gardner, George P., Boston.
Gardner, John L., Boston.
Gardner, Mrs. John L., Brookline.
Gardner, William Amory, Groton.
Gaston, William A., Boston.
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Gill, George B., Medford.
Gillard, William, Dorchester.
Gilmore, E. W., North Easton.
Gilson, F. Howard, Wellesley Hills.
Goddard, Joseph, Sharon.
Goodell, L. W., Dwight.
Gowing, Mrs. Clara E., Kendal Green.
Gray, James, Wellesley.
Gray, Mrs. John C., Boston.
Gregory, Hon. James J. H., Marblehead.
Grew, Edward S., Boston.

Hadwen, Obadiah B., Worcester.
Hale, James O., Byfield.
Hall, Edwin A., Cambridgeport.

Hall, George A., Chelsea.
Hall, Jackson E., Cambridge.
Hall, Osborn B., Malden.
Hall, William F., Brookline.
Halliday, William H., South Boston.
Hammond, George W., Boston.
†Harding, George W., Arlington.
Harding, Louis B., Chestnut Hill.
Hardy, F. D., Cambridgeport.
Hargraves, William J., Jamaica Plain.
Harlow, James F., Quincy.
Harris, Charles, Cambridge.
Harris, Thaddeus William, A. M., Keene, N. H.
Hartshorn, Arthur E., Worcester.
Harwood, George Fred, Newton.
Haskell, Edwin B., Auburndale.
Hastings, Levi W., Brookline.
Hatch, Edward, Boston.
Haven, Franklin, Boston.
Hawken, Mrs. Thomas, Rockland, Me.
Hayward, George P., Chestnut Hill.
†Hazeltine, Hazen, Boston.
Hellier, Charles E., Boston.
Hemenway, Augustus, Canton.
Hemenway, Mrs. Augustus, Canton.
Henshaw, Joseph P. B., Boston.
Henshaw, Samuel, Cambridge.
Heurlin, Julius, South Braintree.
Hewett, Miss Mary C., Canton.
Higginson, Francis L., Boston.
Higginson, Mrs. Henry L., Boston.
Hilbourn, A. J., Boston.
Hill, John, Stoneham.
Hittinger, Jacob, Mt. Auburn.
Hoar, Samuel, Concord.
Hodgkins, John E., Portsmouth, N. H.
Hoitt, Hon. Charles W., Nashua, N. H.
Hollingsworth, Amor L., Milton.
Hollingsworth, Z. T., Boston.
Hollis, George W., Allston.
Holmes, Edward J., Boston.
Holt, Gustavus C., Belmont.
Holt, Mrs. Stephen A., Cambridge.
Holt, William W., Winchester.
Hooper, Mrs. Robert C., Boston.
Hooper, William, Boston.
Horner, Mrs. Charlotte N. S., Georgetown.
Horsford, Miss Kate, Cambridge.
Hosmer, Oscar, Wenham.
Hovey, Charles H., South Pasadena, Cal.
Hovey, Stillman S., Woburn.
Howard, Joseph W., Somerville.
Hubbard, Charles Wells, Weston.
Hubbard, James C., Everett.
Humphrey, George W., Dedham.
Hunnewell, Arthur, Wellesley.
Hunnewell, Henry Sargent, Wellesley.
Hunnewell, Walter, Wellesley.
Hunt, Dudley F., Reading.
Hunt, Francis W., Melrose.
Hunt, Franklin, Charlestown, N. H.
Hunt, William H., Concord.

Jack, John George, Jamaica Plain.
Jackson, Charles L., Cambridge.
Jackson, Robert T., Cambridge.
James, Ellerton, Nahant.
James, Mrs. Ellerton, Nahant.
James, George Abbot, Nahant.
Janvrin, William S., Revere.
Jeffries, William A., Boston.
Jenks, Charles W., Bedford.
Johanssohn, Emil, Brookline.
Johnson, J. Frank, Malden.

Jones, Jerome, Brookline.
Jones, Dr. Mary E., Boston.
Jordan, Eben D., Boston.
Jordan, Henry G., Brookline.
Jose, Edwin H., Cambridgeport.

Kakas, Edward, West Medford.
Kellen, William V., Marion.
Kelley, George B., Jamaica Plain.
Kendall, D. S., Woodstock, Ont.
Kendall, Edward, Cambridgeport.
†Kendall, Joseph R., San Francisco, Cal.
Kendall, Dr. Walter G., Atlantic.
Kendrick, Mrs. H. P., Boston.
Kennedy, George G., M. D., Roxbury.
Kent, John, Chestnut Hill.
Keyes, John M., Concord.
Kidder, Charles A., Southborough.
Kidder, Nathaniel T., Milton.
Kimball, David P., Boston.
King, D. Webster, Boston.
Kingman, Abner A., Brookline.
Kingman, C. D., Middleborough.
Kinney, H. R., Worcester.
Knapp, Walter H., Newtonville.

Lamb, Horatio A., Milton.
Lancaster, Charles B., Boston.
Lanier, Charles, Lenox.
Lawrence, Amory A., Boston.
Lawrence, Amos A., Boston.
Lawrence, James, Groton.
Lawrence, John, Groton.
Lawrence, Rt. Rev. William, Boston.
Learned, Charles A., Arlington.
Lee, Daniel D., Jamaica Plain.
Lee, Francis H., Salem.
Lee, George C., Newton.
Leeson, Hon. Joseph R., Newton Centre.
Leighton, George B., Monadnock, N. H.
Lemme, Frederick, Charlestown.
Leuchars, Robert B., Dorchester.
Libby, Charles W., Medford.
Lincoln, George, Hingham.
Lincoln, Col. Solomon, Boston.
Little, James L., Brookline.
Little, John Mason, Swampscott.
Locke, Edwin F., West Medford.
Locke, Isaac H., Belmont.
Lockwood, Rhodes, Boston.
Lodge, Richard W., Boston.
Loftus, John P., Dorchester.
Loomis, Elihu G., Bedford.
Loring, Augustus P., Beverly.
Loring, Mrs. William Caleb, Beverly.
Lathrop, William S. H., Boston.
Low, George D., Boston.
†Lowder, John, Watertown.
Lowell, Abbott Lawrence, Boston.
Lowell, Miss Amy, Brookline.
Lowell, James A., Chestnut Hill.
Lowell, John, Newton.
Luke, Otis H., Brookline.
Lumb, William, Boston.
Lunt, William W., Hingham.
Lyman, George H., Wareham.
Lyman, Mrs. Theodore, Brookline.

Mabbett, George, Plymouth.
McCarty, Timothy, Providence, R. I.
Mackie, George, M. D., Attleboro.
McWilliam, George, Whitinsville.
†Mahoney, John, Boston.
Mallett, E. B., Jr., Freeport, Me.
Mann, James F., Ipswich.
Manning, Jacob W., Reading.
Manning, J. Woodward, Reading.

Manning, Mrs. Lydia B., Reading.
Manning, Warren H., Brookline.
Marble, Benjamin C., Manchester.
Marshall, Frederick F., Everett.
Marston, Howard, Boston.
Mason, Miss Ellen F., Boston.
Mason, Col. Frederick, Taunton.
Mathison, Fred R., Waltham.
Matthews, Nathan, Boston.
Matthews, Nathan, Jr., Boston.
May, Frederick W. G., Boston.
Melvin, George, South Framingham.
Melvin, James C., West Newton.
Merriam, Charles, Boston.
Merriam, Herbert, Weston.
Metivier, James, Cambridge.
Milmore, Mrs. Joseph, Washington, D. C.
Minot, Charles S., Milton.
Mitton, Edward J., Brookline.
Mixter, George, Boston.
Monteith, David, Dedham.
Montgomery, Alexander, Natick.
Montgomery, Alexander, Jr., Natick.
Moore, George D., Arlington.
Moore, John H., Concord.
Morgan, George H., New York, N. Y.
Morse, John T., Jr., Boston.
Morse, Robert M., Jamaica Plain.
Morton, James H., Mattapan.
Moseley, Charles H., Roxbury.
Motley, E. Preble, Boston.
Mudge, George A., Portsmouth, N. H.
Murdock, Albert L., Boston.
Murray, Peter, Fairhaven.
Mutch, John, Newtonville.

Nevins, Mrs. David, Methuen.
Newman, John R., Winchester.
Newton, Rev. William W., Pittsfield.
Nickerson, Mrs. George A., Dedham.
Norton, Charles W., Allston.
Norton, Edward E., Boston.

Oakman, Hiram A., North Marshfield.
Olmstead, Frederick Law, Jr., Brookline.
Olmstead, John C., Brookline.
Orpet, Edward O., South Lancaster.

Page, Mrs. Henrietta, Boston.
Paige, Clifton H., Mattapan.
Parker, Charles W., Boston.
Parkman, Henry, Boston.
Parsons, John E., Lenox.
Patten, Marcellus A., Tewksbury.
Paul, Alfred W., Dighton.
Peabody, Francis H., Boston.
Peabody, George A., Danvers.
Peabody, John E., Salem.
Peabody, S. Endicott, Salem.
Peck, William G., Arlington.
Pierce, Miss Marion W., Topsfield.
†Perry, George W., Malden.
Pfaff, Col. Charles, South Framingham.
Phillips, John C., North Beverly.
Phillips, Mrs. John C., North Beverly.
Phillips, William, North Beverly.
Pickman, Dudley L., Boston.
Pickman, Mrs. Ellen R., Boston.
Pierce, Dean, Brookline.
Pierce, Elisha N., Waltham.
Pierce, George Francis, Neponset.
Pond, Preston, Winchester.

Jones, Jerome, Brookline.
Jones, Dr. Mary E., Boston.
Jordan, Eben D., Boston.
Jordan, Henry G., Brookline.
Jose, Edwin H., Cambridgeport.

Kakas, Edward, West Medford.
Kellen, William V., Marion.
Kelley, George B., Jamaica Plain.
Kendall, D. S., Woodstock, Ont.
Kendall, Edward, Cambridgeport.
†Kendall, Joseph R., San Francisco, Cal.
Kendall, Dr. Walter G., Atlantic.
Kendrick, Mrs. H. P., Boston.
Kennedy, George G., M. D., Roxbury.
Kent, John, Chestnut Hill.
Keyes, John M., Concord.
Kidder, Charles A., Southborough.
Kidder, Nathaniel T., Milton.
Kimball, David P., Boston.
King, D. Webster, Boston.
Kingman, Abner A., Brookline.
Kingman, C. D., Middleborough.
Kinney, H. R., Worcester.
Knapp, Walter H., Newtonville.

Lamb, Horatio A., Milton.
Lancaster, Charles B., Boston.
Lanier, Charles, Lenox.
Lawrence, Amory A., Boston.
Lawrence, Amos A., Boston.
Lawrence, James, Groton.
Lawrence, John, Groton.
Lawrence, Rt. Rev. William, Boston.
Learned, Charles A., Arlington.
Lee, Daniel D., Jamaica Plain.
Lee, Francis H., Salem.
Lee, George C., Newton.
Leeson, Hon. Joseph R., Newton Centre.
Leighton, George B., Monadnock, N. H.
Lemme, Frederick, Charlestown.
Leuchars, Robert B., Dorchester.
Libby, Charles W., Medford.
Lincoln, George, Hingham.
Lincoln, Col. Solomon, Boston.
Little, James L., Brookline.
Little, John Mason, Swampscott.
Locke, Edwin F., West Medford.
Locke, Isaac H., Belmont.
Lockwood, Rhodes, Boston.
Lodge, Richard W., Boston.
Loftus, John P., Dorchester.
Loomis, Elihu G., Bedford.
Loring, Augustus P., Beverly.
Loring, Mrs. William Caleb, Beverly.
Lathrop, William S. H., Boston.
Low, George D., Boston.
†Lowder, John, Watertown.
Lowell, Abbott Lawrence, Boston.
Lowell, Miss Amy, Brookline.
Lowell, James A., Chestnut Hill.
Lowell, John, Newton.
Luke, Otis H., Brookline.
Lumb, William, Boston.
Lunt, William W., Hingham.
Lyman, George H., Wareham.
Lyman, Mrs. Theodore, Brookline.

Mabbett, George, Plymouth.
McCarty, Timothy, Providence, R. I.
Mackie, George, M. D., Attleboro.
McWilliam, George, Whitinsville.
†Mahoney, John, Boston.
Mallett, E. B., Jr., Freeport, Me.
Mann, James F., Ipswich.
Manning, Jacob W., Reading.
Manning, J. Woodward, Reading.

Manning, Mrs. Lydia B., Reading.
Manning, Warren H., Brookline.
Marble, Benjamin C., Manchester.
Marshall, Frederick F., Everett.
Marston, Howard, Boston.
Mason, Miss Ellen F., Boston.
Mason, Col. Frederick, Taunton.
Mathison, Fred R., Waltham.
Matthews, Nathan, Boston.
Matthews, Nathan, Jr., Boston.
May, Frederick W. G., Boston.
Melvin, George, South Framingham.
Melvin, James C., West Newton.
Merriam, Charles, Boston.
Merriam, Herbert, Weston.
Metivier, James, Cambridge.
Milmore, Mrs. Joseph, Washington, D. C.
Minot, Charles S., Milton.
Mitton, Edward J., Brookline.
Mixter, George, Boston.
Monteith, David, Dedham.
Montgomery, Alexander, Natick.
Montgomery, Alexander, Jr., Natick.
Moore, George D., Arlington.
Moore, John H., Concord.
Morgan, George H., New York, N. Y.
Morse, John T., Jr., Boston.
Morse, Robert M., Jamaica Plain.
Morton, James H., Mattapan.
Moseley, Charles H., Roxbury.
Motley, E. Preble, Boston.
Mudge, George A., Portsmouth, N. H.
Murdock, Albert L., Boston.
Murray, Peter, Fairhaven.
Mutch, John, Newtonville.

Nevins, Mrs. David, Methuen.
Newman, John R., Winchester.
Newton, Rev. William W., Pittsfield.
Nickerson, Mrs. George A., Dedham.
Norton, Charles W., Allston.
Norton, Edward E., Boston.

Oakman, Hiram A., North Marshfield.
Olmstead, Frederick Law, Jr., Brookline.
Olmstead, John C., Brookline.
Orpet, Edward O., South Lancaster.

Page, Mrs. Henrietta, Boston.
Paige, Clifton H., Mattapan.
Parker, Charles W., Boston.
Parkman, Henry, Boston.
Parsons, John E., Lenox.
Patten, Marcellus A., Tewksbury.
Paul, Alfred W., Dighton.
Peabody, Francis H., Boston.
Peabody, George A., Danvers.
Peabody, John E., Salem.
Peabody, S. Endicott, Salem.
Peck, William G., Arlington.
Pierce, Miss Marion W., Topsfield.
†Perry, George W., Malden.
Pfaff, Col. Charles, South Framingham.
Phillips, John C., North Beverly.
Phillips, Mrs. John C., North Beverly.
Phillips, William, North Beverly.
Pickman, Dudley L., Boston.
Pickman, Mrs. Ellen R., Boston.
Pierce, Dean, Brookline.
Pierce, Elisha N., Waltham.
Pierce, George Francis, Neponset.
Pond, Preston, Winchester.

Pope, Col. Albert A., Cohasset.
Porter, Alexander S., Boston.
Porter, James C., Wollaston.
Porter, Hon. Joseph S., Washington, D. C.
Prang, Louis, Boston.
Pratt, Laban, Dorchester.
Pratt, Lucius G., West Newton.
Pratt, Robert M., Boston.
Prendergast, J. M., Boston.
Prescott, Eben C., New York, N. Y.
Presson, Alfred, Gloucester.
Preston, Howard Willis, Providence, R. I.
Pringle, Cyrus G., Charlotte, Vt.
Proctor, T. E., Boston.
Prouty, Gardner, Littleton.
Putnam, George, Manchester.
Putnam, George J., Brookline.
Putnam, Joshua H., Newton Centre.

Quinby, Hosea M., M. D., Worcester.

Raddin, Everett W., North Cambridge.
Rand, Harry S., North Cambridge.
Rand, Oliver J., Cambridgeport.
Rawson, Herbert W., Arlington.
Rawson, Warren W., Arlington.
Ray, James F., Franklin.
Raymond, Walter, Boston.
Read, Charles A., Manchester.
Reardon, Edmund, Cambridgeport.
Reardon, John B., Boston.
Reed, Henry R., Jamaica Plain.
Rice, George C., Worcester.
Rich, William P., Chelsea.
Richards, John J., Brookline.
Richardson, Charles E., Brookline.
Richardson, Dr. William L., Boston.
Rinn, J. Ph., Boston.
Ripley, Charles, Dorchester.
Ripley, Ebed L., Hingham Centre.
Robb, Russell, Concord.
Robinson, John, Salem.
Robinson, Joseph B., Dorchester.
Roffe, Albert H., Newton Centre.
Rogers, H. H., Fairhaven.
Rogers, Mrs. Jacob C., Peabody.
Roland, Thomas, Nahant.
Rothwell, James E., Brookline.
Roy, David Frank, Malden.
Ruddick, William H., M. D., South Boston.
Russell, George, Woburn.
Russell, James S., Milton.
Russell, Walter, Arlington.

Salisbury, William C. G., Brookline.
Saltonstall, Richard M., Chestnut Hill.
Sanford, Oliver S., Wellesley.
Sanger, Mrs. George P., Boston.
Sargent, Andrew Robeson, Brookline.
Sargent, Charles S., Brookline.
Sargent, Mrs. Charles S., Brookline.
Sargent, Charles Sprague, Jr., Brookline.
Sargent, Mrs. Francis W., Wellesley.
Sawtelle, Eli A., Amherst, N. H.
Sawyer, Timothy T., Boston.
Scorgie, James C., Cambridge.
†Scott, Charles, Newton.
Sears, Miss Clara E., Boston.
Sears, Miss Emily E., Boston.
Sears, Dr. Henry F., Boston.
Sears, J. Montgomery, Boston.
Sears, Mrs. J. Montgomery, Boston.

Shaler, Nathaniel S., Cambridge.
Sharp, Miss Helen, Boston.
Shaw, Christopher C., Milford, N. H.
Shaw, Francis, Wayland.
Shaw, Mrs. Robert G., Wellesley.
Shorey, John L., Lynn.
Shuman, Hon. A., Roxbury.
Shurtleff, Josiah B., Jr., Revere.
Sias, Charles D., Wenham.
Siebrecht, H. A., New Rochelle, N. Y.
Simpkins, Miss Mabel, Yarmouth.
Skinner, Francis, Boston.
Skinner, Francis, Jr., Dedham.
Sleeper, Henry Davis, Boston.
Smiley, Daniel, Lake Mohonk, N. Y.
Smith, Archibald, West Somerville.
Smith, Calvin W., Wellesley Hills.
Smith, Charles H., Newton Highlands.
Smith, Charles S., Lincoln.
Smith, Edward N., San Francisco, Cal.
Smith, Thomas Page, Waltham.
Snow, Eugene A., Melrose.
Sohier, Col. William D., Beverly.
Souther, Charles H., Jamaica Plain.
Spaulding, Edward, West Newton.
Spooner, William H., Jamaica Plain.
Sprague, Isaac, Wellesley Hills.
Springall, George, Malden.
Stearns, Charles H., Brookline.
Stearns, Frank W., Newton.
Stedman, Henry R., M. D., Roslindale.
Stevens, Hon. Moses T., Andover.
Stewart, William J., Winchester
Stone, Charles A., Newton.
Stone, Charles W., Boston.
Stone, Prof. George E., Amherst.
Stone, George F., Chestnut Hill.
Strater, Herman, Roxbury.
Strong, William C., Waban.
Sturgis, Richard Clipston, Boston.
Swain, Charles E., Roxbury.
Sweet, Everell F., Malden.

Taylor, Charles H., Boston.
Taylor, Horace B., Portland, Me.
Temple, Felker L., Boston.
Tenney, C. H., Methuen.
Thatcher, William, Brookline.
Thayer, Mrs. Alice R., Boston.
Thayer, Bayard, Lancaster.
Thayer, Mrs. Bayard, Lancaster.
Thayer, Eugene V. R., South Lancaster.
Thayer, Mrs. Eugene V. R., South Lancaster.
Thayer, Henry J., Boston.
Thayer, John E., South Lancaster.
Thayer, Mrs. John E., South Lancaster.
Thayer, Nathaniel, Lancaster.
Thayer, Mrs. Nathaniel, Lancaster.
Thayer, S. V. R., Boston.
Thiemann, Hermann, Owasso, Mich.
Thomas, W. B., Manchester.
Thurlow, Thomas C., West Newbury.
Tilton, Stephen W., Allston.
Tolman, Benjamin, Concord.
Tolman, Miss Harriet S., Boston.
Toppan, Roland W., Malden.
Torrey, Everett, Charlestown.
Tower, Miss Ellen May, Lexington.

Tower, Mrs. Helen M., Cambridge.
Tower, Sylvester, Boston.
Travis, Charles B., Brighton.
Trepess, Samuel J., Glencove, L. I., N. Y.
Tucker, Lawrence, Boston.

Underwood, Loring, Belmont.

Vander-Woerd, Charles, Waltham.
Vaughan, William Warren, Boston.
Vinal, Miss Mary L., Somerville.

Wakefield, E. H., Cambridge.
Walcott, Henry P., M. D., Cambridge.
Waldo, C. Sidney, Jamaica Plain.
Wales, George O., Braintree.
Walker, Miss Mary Sophia, Waltham.
Walsh, Michael H., Woods Hole.
Waltham, George C., Dorchester.
Walton, Daniel G., Wakefield.
Warburton, Chatterton, Fall River.
Ward, Francis Jackson, Roxbury.
Ward, John, Newton Centre.
Ware, Benjamin P., Clifton.
Ware, Miss Mary L., Boston.
Warren, Samuel D., Dedham.
Washburn, Andrew, Hyde Park.
Watson, Benjamin M., Jamaica Plain.
Watson, Thomas A., East Braintree.
Watts, Isaac, Waverley.
Webster, Hollis, Cambridge.
Welch, David, Dorchester.
Welch, Edward J., Dorchester.
Weld, Christopher Minot, Readville.
Weld, George W., Boston.
Weld, Richard H., Boston.
Weld, Gen. Stephen M., Dedham.
West, Mrs. Maria L., Neponset.
Wheeler, Frank, Concord.
Wheeler, James, Brookline.
Wheeler, Wilfred, Concord.
Wheelwright, A. C., Brookline.
Wheelwright, Edmund M., Boston.
Whitcomb, William B., Medford.
White, Mrs. Charles T., Boston.
White, Francis A., Brookline.
White, George R., Boston.
White, Joseph H., Brookline.
Whitney, Arthur E., Winchester.
Whitney, Ellerton P., Milton.
Whitney, Henry M., Cohasset.
Whittier, George E., Groton.
Whittier, William Benjamin, South Framingham.
Wigglesworth, George, Milton.
Wilbur, George B., Woods Hole.
Wilder, Edward Baker, Dorchester.
Wilder, Henry A., Malden.
Willard, E. W., Newport, R. I.
Willcutt, Levi L., Brookline.
Williams, Miss Adelia Coffin, Roxbury.
Williams, Benjamin B., Boston.
Williams, Henry Bigelow, Boston.
Williams, John Davis, Boston.
Williams, Philander, Taunton.
Wilson, Col. Henry W., Boston.
Wilson, William Power, Boston.
Winthrop, Robert C., Jr., Boston.
Wood, William K., West Newton.
Wright, George C., West Acton.
Wright, John G., Brookline.
Wyman, Oliver B., Shrewsbury.
Wyman, Windsor H., North Abington.

ANNUAL MEMBERS.

Members of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Alles, William H., Chestnut Hill.
Anderson, George M., Milton
Atkinson, Miss Caroline P., Brookline.
Atkinson, Edward, Brookline.
Ayres, Miss Helen F., Medford.

Bangs, Francis R., Boston.
Barker, John G., South Bend, Ind.
Barr, John, Wellesley.
Bigelow, Arthur J., Eastlake, Worcester.
Bigelow, Mrs. Nancy J., Southborough.
Bird. John L., Dorchester.
Blackmur, Paul R., Quincy.
Blomberg, Carl, North Easton.
Boyden, Clarence F., Taunton.
Bradley, Miss Abby A., Hingham.
Braman, George H., Newton.
Breck, Charles H., Newton.
Breed, Edward W., Clinton.
Bullard, John C., Cambridge.
Butler, Edward, Wellesley.

Cabot, Miss Mabel, Brookline.
Carpenter, Frank O., West Roxbury.
Chase, Joseph S., Malden.
Child, Stephen, Auburndale.
Chubbuck, Isaac Y., Roxbury.
Clapp, Henry L., Roxbury.
Clark, John W., North Hadley.
Clark, Joseph, Manchester.
Clark, Theodore M., Newtonville.
Clinkaberry, Henry T., Trenton, N. J.
Collins, Frank S., Malden.
Coolidge, Dr. Sumner, Watertown.
Cotter, Lawrence, Danville, Pa.
Crosby, J. Allen, Jamaica Plain.
Curtis, Joseph H., Boston.
Curtis, Louville, Tyngsborough.

Davis, Frederick S., West Roxbury.
Derby, William H., Revere.
Dolbear, Mrs. Alice J., College Hill.
Dorr, George B., Boston.
Doyle, William E., Cambridge.
Duffley, Daniel, Brookline.
Duncan, John W., West Roxbury.

Eastman, Edmund C., Brookline.
Endicott, Miss Charlotte M., Canton.
Eustis, William Tracy, Brookline.
Evans, Frank H., Malden.
Ewell, Marshall F., Marshfield Hills.

Farlow, Mrs. William G., Cambridge.
Fenno, Warren, Revere.
Fisher, Sewell, Boston.
Fiske, Harry E., Wollaston.
Fitzgerald, Desmond, Brookline.
Fletcher, Fred W., Auburndale.
Forbes, William H., Jamaica Plain.
Foster, Lucius H., Dorchester.
Francis, George E., M. D., Worcester.
Freeman, Miss Harriet E., Boston.
Fuller, T. Otis, Needham.

Garthley, James, Fairhaven.
Gill, Mrs. E. M., Medford.
Grew, Henry Sturgis, Boston.
Grey, Robert Melrose, Belmont, Cuba.
Grey, Thomas J., Chelsea.

Hall, Stacy, Boston.
Hallstram, Charles W., West Somerville.
Ham, Fernald E., Burlington.
Harrison, C. S., York, Nebraska.
Harrison, Thomas, Melrose Highlands.
Hartwell, Samuel, Lincoln.
Hatfield, T. D., Wellesley.
Hawes, Cyrus Alger, Brookline.
Herff, B. van, New York, N. Y.
Heustis, Warren H., Belmont.
Hildreth, Miss Ella F., Lowell.
Hill, Arthur Dehon, Boston.
Hill, J. Willard, Belmont.
Hinds, Warren D., Townsend.
Hollis, George, South Weymouth.
Houghton, George S., West Newton.
Hovey, Charles L., Waban.
Howden, Thomas, Whitinsville.
Hubbard, Allen, Newton Centre.
Hubbard, F. Tracy, Cambridge.
Huston, Miss Katharine W., Jamaica Plain.
Ilienberger, Henry, Brookline.
Ireland, Robert D., Winthrop.

James, Robert Kent, Newton Centre.
Jameson, G. W., East Lexington.
Johnston, Robert, Lexington.

Keith, Mrs. Mary R., Washington, D. C.
Kelsey, Harlan P., Boston.
Kemp, William S., Brookline.
Kennard, Frederic H., Brookline.
Kimball, Richard D., Waban.
Knott, N. W. T., Waban.

Lancaster, Mrs. E. M., Roxbury.
Laurie, Robert, Newport, R. I.
Lawson, Joshua, Brookline.
Lewis, E. L., Taunton.
Lincoln, Miss Agnes W., Medford.
Lomax, George H., Somerville.
Loring, Mrs. Thacher, Boston.
Loring, William C., Beverly.
Lothrop, Thornton K., Boston.
Low, Hon. Aaron, Hingham.
Lumsden, David, Roslindale.

McLaren, Anthony, Westwood.
Manda, W. A., South Orange, N. J.
Manning, A. Chandler, Reading.
Manning, Richard C., Salem.
Martin, William J., Milton.
Meriam, Horatio C., D. M. D., Salem.
Metcalf, Dr. Ben H., Winthrop.
Milman, William, Roxbury.
Moody, Abner J., Lexington.
Morgan, George M., Boston.
Morrison, William, Cohasset.
Moseley, Frederick C., Dorchester.
Moseley, Frederick Strong, Newburyport.
Munson, Prof. W. M., Orono, Me.

Newton, John F., Roxbury.
Nicholson, William, Framingham.
Nixon, Arthur, Taunton.
Norton, Michael H., Boston.
Norton, Patrick, Dorchester.

Oakes, F. L., Newton.

Park, William D., Boston.
Parker, John, Newtonville.
Parker, Walter S., Reading.
Pettigrew, John A., Jamaica Plain.
Pierce, Mrs. F. A., Brookline.
Pray, James Sturgis, Cambridge.
Pritchard, John, Brighton.
Purdie, George A., Ormond, Florida.

Rea, Charles H., Norwood.
Rea, Frederic J., Norwood.
Rich, Miss Ruth G., Dorchester.
Rich, William E. C., Roxbury.
Richards, Mrs. P. D., West Medford.
Robb, Peter B., Whitinsville.
Robinson, Walter A., Arlington.
Rodman, Miss Mary, Concord.
Ross, Charles W., Newtonville.
Ross, Henry Wilson, Newtonville.
Ross, Walter D., Worcester.

Sander, Charles, Brookline.
Saunders, Miss Mary T., Salem.
Scott, Augustus E., Lexington.
Scudder, Samuel H., Cambridge.
Searles, E. F., Methuen.
Seaver, Edwin P., Waban.
Sharples, Stephen P., Cambridge.
Shaw, Hon. Edward P., Newburyport.
Shea, James B., Jamaica Plain.
Stevens, Mrs. Mary L., Brookline.
Stone, Joshua C., Watertown.
Strange, David T., Stoneham.
Sullivan, Michael, Revere.
Sutherland, George A., Roslindale.
Swan, Charles W., M. D., Brookline.

Tailby, Joseph, Wellesley.
Teele, William H., West Acton.
Tobey, Rufus T., Roxbury.
Tyler, Mrs. John F., North Andover.
Tyndale, Theodore H., Weymouth.

Vaughan, J. C., Chicago, Ill.

Ware, Horace E., Milton.
Warren, Samuel H., Weston.
Waugh, Prof. F. A., Amherst.
Welch, Patrick, Dorchester.
Westwood, Thomas H., Jamaica Plain.
Wheeler, Ezra H., Dorchester.
Wheeler, Henry A., Newtonville.
Wheelwright, George William, Jamaica Plain.
Whiton, Hon. Starkes, Hingham Centre.
Wilder, Miss Grace S., Dorchester.
Wilder, Miss Jemima R., Dorchester.
Wilkie, Edward A., Newtonville.
Winter, William C., Mansfield.
Wood, Mrs. Anna D., West Newton.
Wood, Elijah A., West Newton.
Wood, E. W., West Newton.
Woodford, Joseph H., Boston.
Woods, Henry F., Boston.

Young, E. Bentley, Boston.

Zirngiebel, Denys, Needham.

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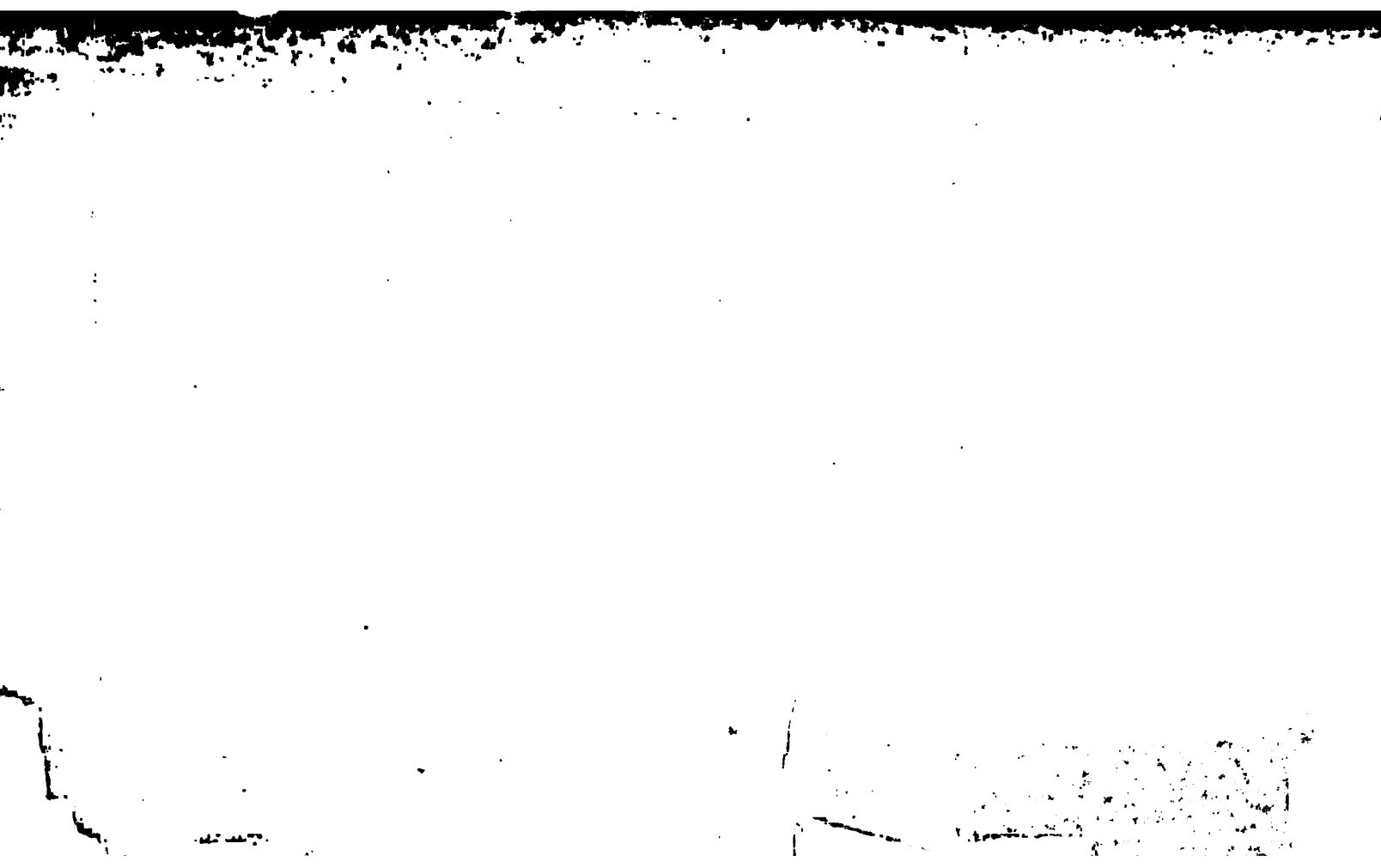

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TRANSACTIONS

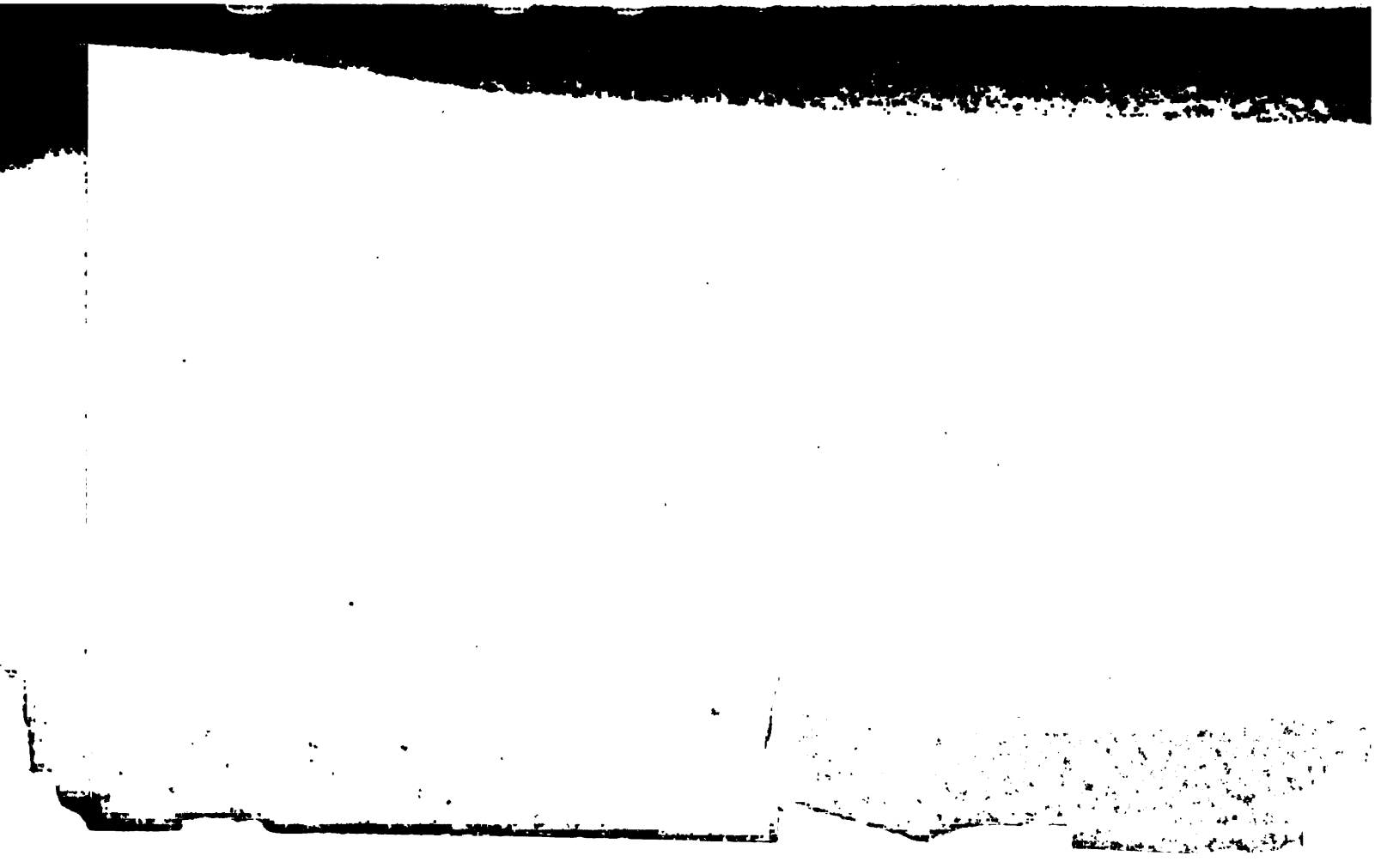
OF THE

MASSACHUSETTS HORTICULTURAL SOCIETY

FOR THE YEAR 1904

PART 1

PUBLISHED BY THE SOCIETY
BOSTON
NINETEEN HUNDRED AND FOUR



TRANSACTIONS

OF THE

Massachusetts Horticultural Society

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FOR THE YEAR 1904

PART I

BOSTON
PUBLISHED BY THE SOCIETY
NINETEEN HUNDRED AND FOUR

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THE INAUGURAL MEETING AND PRESIDENT'S ADDRESS, JANUARY 2, 1904.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

INAUGURAL MEETING.

THE first Inaugural Meeting under the By-laws in effect January 1, 1904, was held at Horticultural Hall, Boston, on Saturday, January 2, 1904, at twelve o'clock, noon.

The retiring President, O. B. Hadwen, presided and introduced the President-elect, Henry P. Walcott, M. D., with the following remarks:

Ladies and Gentlemen, Members of this Society:

We meet at the commencement of the new year to organize with new officers under the new By-laws for the year ensuing, which it is hoped will insure for us an increased usefulness and prosperity.

I now take leave of an office that I have held for the past three years, and all my relations with you during this time have been pleasant and harmonious from the beginning to the end. I thank you most heartily for the friendliness and forbearance you have manifested through my official term. I congratulate you even more heartily upon your choice of my successor. This choice is in itself a promise of the continued progress of the Society in horticulture and an assurance that it will maintain its advanced position among the horticultural societies of the world.

Mr. President, I welcome you to your office, and, ladies and gentlemen of the Society, permit me to present to you Dr. Walcott, your President.

ADDRESS OF PRESIDENT WALCOTT.

Ladies and Gentlemen:

It is a happy augury for the Society that on so inclement a day so many of its members are present at this meeting.

In the early part of the year 1829 a public meeting was held in this city by a number of citizens of Boston and the surrounding towns who believed that an association should be formed for the purpose of advancing the science and practice of horticulture. It was at this time decided to organize a society. On the 17th of March, 1829, the Massachusetts Horticultural Society was fully organized, and on the 28th of June following, the act of incorporation by the Legislature was accepted by the Society. At the end of seventy-five years it is for us to demonstrate that the hopes of the fathers have not ended in disappointment and to show to what extent their anticipations have been realized.

The Society was incorporated for the purpose of encouraging and improving the science and practice of horticulture, and for promoting the amelioration of the various species of trees, fruits, plants, and vegetables, and the introduction of new species and varieties.

Two years later an act of the Legislature authorized the Society to undertake the care of a garden and cemetery, and thus the cemetery of Mount Auburn came into existence.

The attempt to combine under the same administration an ornamental garden and a burial place for the dead was attended by many difficulties, and it was soon found advisable to promote the establishment of a separate organization to take over the care of the cemetery. This was done, but fortunately for the interests of horticulture, the separation of interests was not complete, and this Society, in all the years since that act, has been in the receipt of large sums of money earned through the wise administration of the trustees of Mount Auburn and paid to this Society

in recognition of our original property rights. It is a tribute to the founders of this Society that Dr. Jacob Bigelow, one of the wisest and greatest of all the citizens of Boston, was willing to place in the hands of this Society the execution of the plans which he had developed for a rural cemetery.

The garden which the Society had hoped to develop in the grounds of Mount Auburn has flourished under the fostering care of the trustees of Mount Auburn and has been the inspiration and the model for all the beautiful resting places of the dead throughout our land. The early attempt to establish and maintain an experimental garden was abandoned after a few years' trial, though the chairman was no less a personage than Mr. Justice Story, and was never resumed, nor, indeed, is it likely to be again undertaken on account of the present system of well-endowed municipal, state, and national experimental stations for the development of agriculture and horticulture.

During the period subsequent to the establishment of this Society the Botanic Garden in Cambridge has been largely developed in ways advantageous to horticulture, and some may remember that it was proposed in the early days to establish a school for the education of gardeners. Benjamin Bussey, an early member, left by his will funds for the purpose of establishing the Bussey Institution for providing systematic instruction in agriculture, useful and ornamental gardening, land surveying, and in chemistry and natural history as applied to agriculture, horticulture, and forestry, and such instruction is now given upon the Bussey home estate in West Roxbury. By a fortunate arrangement a portion of his estate not essential to the uses of the school has become the Arnold Arboretum, which owes its establishment to the fund given to Harvard College under the provisions of the will of James Arnold, of New Bedford, also a member of this Society, and has been built up by the energy, skill, persuasion, and scientific capacity of our vigorous colleague into one of the great collections of the world of all that is interesting among the trees and shrubs of our northern zone.

Marshall P. Wilder, also, for more than fifty-six years, was an active, influential, honored and well-beloved member of this Society, and was more helpful, probably, than any other man in

procuring the establishment of the State Agricultural College at Amherst.

Our Society may well claim, then, that the purposes of the founders have not been thrown aside, and that institutions for instruction in horticulture have been created through the efforts of our own members which equal the foundations laid by kings and states.

During the past two years the Society has devoted much time and wasted, perhaps, some of its energies upon the subject of a revision of its by-laws. Various committees have considered them with varying results, and the Society itself has not at all times been able to arrive at a definite conclusion. In the past year we did, however, come to an agreement, and did adopt an amended code of by-laws which appeared to be satisfactory to all.

This new code approaches very nearly to that adopted by the founders of the Society and will, I trust, answer the only purpose which we all have at heart, the increased usefulness of the Society to the community about us, through the better application of its great resources to the science and art of horticulture; resources, let us always remember, that have in large measure been handed down to us by our predecessors, and which we in our turn must administer as a trust for the benefit of those who come after us.

The form of government which has been adopted, without division, has important and obvious advantages. It will offer at the annual elections a number of candidates for the important offices sufficiently limited in number as to enable the members to exercise a just discrimination in their choice, but not so limited that the Society cannot in a reasonable period effect any changes that may be desired in the organization of the governing body or in the committees appointed by that board.

It will have been unfortunate in the highest degree, however, if this change leads to any lack of interest on the part of the members at large in the intimate affairs of the Society. This unfortunate result cannot happen if all the provisions of the new form of government are called into operation. You have elected a board of trustees upon which every interest of the Society is fairly and ably represented. Any five members of that body can

at any time procure a meeting of the Society; fifteen members acting together may cause a meeting to be held; and, lastly, the president, upon his own motion, may request the Society to come together. It is not conceivable that all these means for bringing together our members should fail, and they will not fail whenever the exigencies of the Society require its prompt action. The active interest and support of the members will be freely given, I doubt not, to any administration which economically and wisely uses our great resources for the promotion of all those interests which it is the duty of this Society to foster.

An impression seems to have been created in some quarters that it has been and is the wish of a portion of the Society to curtail the exhibitions either in number or in extent. The criticisms which, at times, have been made upon the character of horticultural exhibitions in general, and of a few which may have been seen in these halls, do not have, as I understand it, this intention. It should be our policy to so arrange matters that any meritorious product of the garden may at any time be shown in our building. Some convenient room in this hall should be always open, under proper supervision, for the exhibition of any plant, flower, fruit, or vegetable which possesses new or superior qualities.

Without especial reference to the great exhibitions of the year which are in no need of commendation, for the public interest in them seems to be assured, I desire to call attention to the exhibitions which have been made for some years under the direction of the Committees upon School Gardens and upon Native Plants; they already attract the attention of many and deserve it from all. The keen interest of the young in plants and flowers, by whatever proper means created, can be turned to good use in a system of education, and will be to them through life a source of reasonable enjoyment and may be converted into a profitable occupation or into a scientific study.

There will always exist differences of opinion, even among the best informed, as to the qualities in plants and flowers which should be adjudged worthy of the premiums of excellence, and the qualities which attract the attention of the general public at our exhibitions are not always those that most commend themselves to

the persons of refined taste. The element of size in flowers has had something of the same power to attract the gaze of the multitude that was possessed by the giant pumpkin at the country fairs of a generation or more since, and, in many instances, the real merits of the two objects are about equal.

An entirely false value has been assigned to the overwrought and oversought size of the flowers at some of the shows, and by that false standard better qualities have been excluded which are more difficult to obtain, are more worthy of praise and, in the end, are more satisfactory to the person of good taste. Do not understand me to decry size when accompanied by a full share of the other excellencies that should belong to the plant, flower, fruit, or vegetable under consideration.

It is essential that the awards made in the name of the Society should be most carefully considered by the various committees charged with this duty. They have not simply to satisfy a number of contestants with the honesty of the award, for that question is fortunately not asked here, they have to satisfy a critical public that no unworthy object has been commended, no matter how much time and money may have been expended on its preparation. They have, beyond all, the task of educating the community up to the appreciation of the really good and, therefore, permanent qualities of excellence in the objects exhibited.

Your committee upon exhibitions has adopted a rule which will commend itself, I am sure, to the good sense of the Society as a requisite for the proper conduct of the business of the prize committee. I refer to the rule which excludes spectators from the exhibition halls during the time when the judges are making their examinations of the objects exhibited.

A number of years ago, more than I am now quite willing to remember, I called the attention of the Society to the practice of some other horticultural societies with reference to their prize committees. I alluded to the custom of obtaining the services of experts in the particular classes of objects exhibited, and I still believe that it would be well to give to the various committees, within the limits of a moderate appropriation of money, authority to call to their assistance acknowledged experts from outside the

Society and beyond the state whenever it is thought advisable to do so.

In connection with the publications of the Society, the meetings for the lectures and discussions of horticultural topics have been a valuable means for interesting the community in our special work. The most influential of the evening newspapers of the city has opened its columns to very full reports of these meetings and has in all ways furthered the legitimate purposes of the Society. It sensibly increased the value of that aid when we recognized in it the personal interest of an old and much valued fellow-member whose long and honorable career of valued services in this community has just ended with the year that is past.

I gladly take advantage of this occasion to publicly invite all who have any interests whatever in horticulture to visit our halls, to attend our lectures, and to make such use of our collections as may be consistent with the rules necessary for their protection.

The Society has been established long enough in its present quarters to have discovered that there are some changes to be made before we shall have a building completely adapted to our various requirements. The halls must serve us not only for our meetings and the stated exhibitions, but must also possess conveniences and attractions sufficient to bring here a fair share of the various gatherings which are always being held in a city of this size, which do not interfere with the legitimate uses of the hall, while they will help to secure for us the funds necessary for an extension of our usefulness. It is evident, I think, that some of these improvements can be made with a comparatively moderate expenditure of money.

The Society early began the formation of a library and for a number of years the purchases of books were made from the funds obtained by annual assessments upon the members, aided by occasional contributions of money or of books from the same source. In 1869 the Stickney Fund, established by Josiah Stickney, a former president of the Society, became available for the purchase of books. From that time on the growth of the library has been rapid, and it is now, with its ten thousand volumes, the best horticultural library in this country and one of the best in the world. No portion of our property contained in

this building is of so much importance as this collection of books and journals, and, notwithstanding the attractive and spacious rooms in which they are deposited, there is still, it seems to me, much to be done before we can feel that a proper protection has been given to our library. I commend to the appropriate committee a prompt consideration of the state of our books and shall venture in your name to assure our committee that much as we desire to save money in the administration of our affairs nothing can be reckoned as a saving which involves a permanent injury to this most valuable possession of the Society.

From the report of the treasurer you will be able to ascertain the details of our financial condition. We have not yet been able to secure as large a rent for the use of our halls as seems to be possible, and it will be the endeavor of the trustees during the coming year to discover appropriate means for increasing the receipts from this source, and, until such means are discovered, it is evident that we must practise a careful economy.

Assuming that we receive the usual payment from the trustees of Mount Auburn, the Society appears to have a larger balance to its credit than at the end of the year 1902.

There seems to me no single object of so much importance to the Society for the procuring of a general interest in our work as an increase in our membership by the addition of all those persons in the community who have or who can be tempted to acquire a taste for the things for which this Society exists. The exhibitions, the unrivaled collection of books and journals, the papers upon horticultural topics and the discussion of them held here at stated intervals, can all be had at a price which is often wasted upon a day of profitless amusement.

It is not always easy to determine the exact amount of influence exercised by associations such as this upon the objects for which they were formed. It seems to me certain, however, that no one can read the volume which contains the history of this Society and become familiar with that long list of distinguished names without finding evidences there of a leadership to which must be assigned the credit for a large share of the horticultural work of this city and of Eastern Massachusetts. It is my intention to give to the word horticulture its most extended definition,

a definition as broad as that given more than fifty years ago by one of the great orators borne upon our rolls, statesman, scholar, and leading citizen. Mr. Winthrop declared, in an address before this Society in 1848, that "horticulture in its most comprehensive sense is emphatically the fine art of common life. It is eminently a republican fine art. It distributes its productions with an equal hand to the rich and to the poor."

The highest expression of this art is found in landscape gardening. The garden and cemetery at Mount Auburn were to have been the laboratory of the Society for the working out of the various problems presented by this art. This dream of the founders, if it was a dream, came to an end when the connection between the two bodies was sundered.

Prizes offered by the Society for the best application of taste and skill in laying out of grounds have been the only substitute which it has been possible for us to use since that time. The private grounds of some of our members have been the examples of skill and taste which we have held up for imitation. I will take but one, the estate of our greatest benefactor, where on the grounds at Wellesley he had transformed a barren New England hillside into a garden which might have been taken bodily from the land of gardens; and in other portions of his domain had used that highest art that ever conceals its source and has left a scene as simple, as dignified, and as true as was his own noble character.

Plants and flowers are apt to come first in mind when the city-bred man thinks of horticulture; but nature, and man when nearest to nature, are most careful of the fruits; and on this side we have not neglected the obligations imposed upon us. Generous prizes have always been offered for the improvement of the fruits and vegetables sold in our markets. The skill of the cultivators of this vicinity, and I cannot go wrong in asserting that the best of them are among our members, is shown by the success with which they have even invaded the markets of the great commercial center of the country.

We are justly proud of our past; let us see to it that our successors may have reason to be also proud of the doings of the men of this day.

Members and friends, you have most graciously called me back to this dignified office for another and my last term of service here.

I can have but one purpose in view, and that is to obtain with your assistance the best results possible for the activities of this honored association, and my hope is that you may not in the end discover that my efforts have been in vain.

HORTICULTURAL PAPERS AND DISCUSSIONS.

THE GYPSY MOTH AND ITS RAVAGES.

BY JOHN K. M. L. FARQUHAR, BOSTON, MASS.

Read before the Society, January 16, 1904, with Stereopticon Illustrations.

THE devastation wrought by the gypsy moth last summer in Medford, Malden, and surrounding towns, should be sufficient warning of the danger which threatens the country from the spread of this insect.

Since its introduction, over thirty years ago, there has been no diminution of its destructive energy, as many persons experienced with insect pests had hoped for, nor have the enemies or parasites of this moth been numerous enough to perceptibly check its progress.

Eggs of the gypsy moth were imported in 1868 or 1869 by a French entomologist named Leopold Trouvelot, then living in Medford, for the purpose of experiment in silk raising. Trouvelot carelessly allowed several of the insects to escape. We are told that he tried to exterminate them, being fully aware of their dangerous character, but finding himself unable to do so he gave public warning of the impending danger.

Within ten years the progeny of these escaped insects had become a nuisance to the inhabitants of the district. Fruit, shade and forest trees were stripped of their leaves by the larvae, which defoliated every tree, deciduous and evergreen, in their course except ash and buttonwood, which were seldom attacked. Flowering shrubs, with the exception of lilacs, suffered in the same manner, also raspberry, blackberry, and strawberry plants; of the last both leaves and fruit were eaten. In the vegetable garden the caterpillars ate tomatoes, cucumbers, peas, beans, beet, corn, rhubarb, potatoes, spinach, dandelion, kale, and other vegetables. They destroyed several thousand young carnation plants of a Medford florist, as well as roses, geraniums, and other bedding plants; even the grass of the lawns did not escape. Certainly the worst characteristic of the gypsy moth is its omnivorous appetite.

The State Board of Agriculture has stated that "the gypsy moth is probably the most fearful insect pest in America." The devastation it has wrought in Medford seems to justify the statement. There, during last summer, we saw large areas of forest as leafless as in December. Pine, spruce, hemlock, and cedar trees were denuded of foliage and are now dead. Many oak trees which put forth a second growth of leaves after the first had been destroyed had that, too, eaten by late caterpillars, and the trees are dead, while of apple trees not only the leaves, but often the half-grown fruit was attacked.

It is unnecessary to speak further of the devastation caused by the gypsy moth or of the nuisance of the offensive caterpillars in the streets and houses. The question is how to control or exterminate the pest.

We believe that no insect has ever been exterminated. The army worm, chinch bug, potato bug, grasshopper, San José scale, and rose bug are insects which we have learned to control.

Last week Congress appropriated $250,000 for the suppression of the cotton-boll weevil; a like sum was asked for by our representative, Mr. Gillett, with which to suppress the gypsy moth, and refused. Just let our gypsy moth gain a foothold in the cotton belt and the cotton-boll weevil, if not the planters, will die of starvation. The gypsy moth is ravenously fond of cotton, eating leaves, soft stems and half-grown bolls with avidity.

The State of Massachusetts is now in much the same position that Trouvelot was thirty years ago. He had introduced the moth, allowed it to escape and menace his neighbors. The state has permitted it to spread until it threatens not only adjoining states but the entire country. It is clearly our duty to give public warning as did Trouvelot, while we put forth every effort to check the spread of the moth.

The infested region includes many railroad freight yards, where freight cars are liable to harbor caterpillars or eggs and transport them great distances. The numerous electric car lines are known to carry the moth into new territory. Three days ago a gentleman told me that while riding through Middlesex Fells last summer, he observed in his automobile a few of the caterpillars which had dropped from the overhanging trees. He had intended to

destroy them on reaching home, but forgot to do so, and he now finds numerous nests in his barn.

Perhaps no individual has suffered more from the ravages of the gypsy moth than General Sam'l C. Lawrence, of Medford, and certainly no one has done more to combat it. During the past year he kept an average force of thirty men steadily at work from the middle of March until the recent snow storm stopped operations; nor has he been discouraged by the fact that when his own trees were cleaned they were constantly reinfested with moths from adjacent land.

One of the bills before the Legislature relating to the gypsy moth places the burden of suppressing it partly on the owner of the premises infested, partly on the city or town, and partly on the state. The passage of this bill would greatly promote the success of such work as General Lawrence has done.

That the people are sufficiently aroused to demand action of the Legislature is conceded. The danger is that such action may be inadequate. If extermination or even control of the moth is to be attained, an appropriation of at least a million dollars, covering a period of four or five years, should be made at once. One fourth of this sum should be available the first year. The state has already spent nearly a million dollars in its endeavor to stamp out the moth; the appropriations were insufficient to do the work successfully and the money has been spent in vain. The State Board of Agriculture is perhaps the best agency to take charge of the work.

It seems to me that in addition to the regular work of destroying eggs, killing caterpillars under burlap, spraying trees, and burning brush-wood, that it would be desirable to send some competent entomologist, thoroughly familiar with the situation, to collect in Europe the parasites which have checked the ravages of the gypsy moth there. These parasites should be brought here, their usefulness ascertained by experiment, and those most valuable propagated and distributed throughout the area infested. Two or three thousand dollars placed in the hands of such a man as Mr. A. H. Kirkland for this purpose would undoubtedly be productive of good results.

Fourteen years ago the Massachusetts Horticultural Society

raised its voice in favor of energetic action against the gypsy moth. There is more cause for alarm today than ever before; this fearful pest will soon be beyond control and the entire state will be visited with such desolation as we saw in Medford last summer.

Discussion.

Hon. J. Lewis Ellsworth said that he had not expected to be the first speaker on the subject of the day's discussion, but had come, rather, to listen to others. He thought the lecturer had stated the matter in very full detail. In preparing his annual report he had visited Medford, Malden, and the adjoining towns, and those who had not seen the ravages in that region could little imagine the calamity that has befallen the country in this pest. The caterpillars even invaded the houses and, in some instances, the occupants were obliged to move out, so intolerable was the nuisance.

While the spread in the infested territory is naturally very slow, the insects are being gradually transported by teams and bicycles to more distant places. Very few colonies have been found south of Boston; a small one is reported in Providence, R. I., and also one in East Bridgewater, Mass., on apple trees; these are all that have been found as yet in that quarter, showing the slow, natural spread of the bug.

The extermination or control of this destructive pest is of vital importance to the forestry interests of Massachusetts. The State Board of Agriculture will, undoubtedly, in the future take more interest in the forestry conditions of the state, but what is the use of reforesting lands if you are going to allow the gypsy moth to destroy it? That is the question of today, Mr. Ellsworth stated, and he was glad that it had been brought up.

James H. Bowditch said that the gypsy and brown-tail moths came over from Europe, leaving behind their natural enemies, so that they have steadily increased, notwithstanding much money and labor expended by the state, towns, and individuals in destroying them by hand. It can never be successfully accomplished in this way, except temporarily.

The only wise and practical method open for us to pursue is to try and duplicate European conditions by the introduction of parasites. Even in Europe there are times when these two moths are troublesome, but they never get beyond the danger limit because natural enemies quickly step in and reduce them to harmless numbers. Then as the moths decrease the parasites fall off until such time as they are again needed.

Mr. Albert Koebele of Alameda, California, probably the best practical parasitical entomologist in the country, who has done most valuable similar work there and elsewhere, makes a definite offer for the sum of $60,000 ($15,000 a year for four successive years) to do this whole work for us. His agents would import the needed parasites, establish them here in the heart of the infested district, and distribute them elsewhere as needed. Under such reasonable and reassuring conditions he ought to be sent for immediately and given full power to act in the premises, because nothing short of such prompt and right action will satisfy the general public that its lawmakers are properly grasping the difficulties of the existing situation.

Theodore F. Borst spoke of Mr. Koebele's qualifications for this work. Mr. Koebele's most important work has been on insects in California, to the great satisfaction of the people of that state. He next went to Oregon, where he was very successful in exterminating insects on fruit. He is a man of world-wide reputation among entomologists and thoroughly reliable.

J. Woodward Manning observed that the brown-tail moth is increasing rather than diminishing. The natural enemies of the brown-tail are having some effect, but such does not appear to be the case with the gypsy moth. There was much to be said in favor of fighting it with its natural enemies, which seems to be the proper method to follow.

Benjamin P. Ware said that the time had gone by when it was necessary to warn people of the danger and menace of the gypsy moth. The work of extermination by the state was dropped at a very unfortunate time and it has since spread a good deal. The moths had appeared in Swampscott and Marblehead, but after the expenditure of several thousand dollars by those towns they have been got under control. It is possible to

exterminate them; it has been done in Marblehead. It is an absolute necessity that a large appropriation be made to continue this work of extermination. It is a danger that must be met, and the quicker the better; the longer delayed the harder it will be. He was glad this meeting was called to start public sentiment on this subject. Congress will heed the voice of the people.

Varnum Frost thought the account of the gypsy moths' depredations was largely overdrawn. He had never seen one in a cultivated field, but admitted that he did not observe any reduction of the pest in Belmont.

E. W. Wood, a member of the State Board of Agriculture, stated that the committee of the Board had consulted everybody in the country who had any knowledge of the moth. As yet they had had no encouragement from parasitic enemies. It had been the policy of those having the matter in charge to work from the outside of the infested district towards the center, and that was the reason why the residents of the region saw so little reduction of the pest.

Hon. Aaron Low said that the insects were likely to be disseminated by market wagons, for they would not spread naturally very fast. It is one of the most menacing things we have to contend with and it is of the highest importance that active, energetic measures be taken to exterminate them.

J. Woodward Manning suggested that a committee from those present be appointed to draw up a resolution favoring the suppression of the gypsy moth by its natural enemies. Such a committee was appointed by the chairman, and the following motion was prepared and unanimously adopted:

Voted, that this meeting approves the action of the Massachusetts Forestry Association in its effort to introduce natural parasites to destroy the gypsy and brown-tail moths and in other ways to check their ravages.

TREES, FLOWERS, AND FRUITS OF THE EAST.

BY H. H. GOODELL, PRESIDENT AGRICULTURAL COLLEGE,
AMHERST, MASS.

Read before the Society, January 23, 1904.

As the traveler approaches the golden city of the East, that city perched on its seven hills and spanning two continents, two species of trees come prominently into view; the one the symbol of life and perpetuity, the other of death and extinction; the one planted when a male child is born, the other marking the last resting place of some beloved one; the one, a giant in size, shading with its outstretched limbs and broad leaves a great area of ground, the other an evergreen, close and compact, tapering up to a point; the one, the *Platanus orientalis*, the plane or sycamore, and the other the *Cupressus horizontalis* or the *sempervirens* found in every Turkish cemetery. A greater contrast between two trees cannot be found. The one standing alone or in small groups, the other massed in such numbers as to constitute a forest, miles in extent. Of the former, two specimens arouse the attention of the curious sight-seer. One stands in the courtyard of the Seraglio at Constantinople, more than fifty feet in circumference and reputed to have been planted by Mahomet II, in 1452, to commemorate the birth of his son. In one of the great ravines dividing the hills of the Bosphorus on the European side, in the valley of Buyukdéré, about fifteen miles from the city, stands the other, celebrated alike for its age, its size, and the historic memories that cluster about its weather-beaten trunk. For two thousand years, according to the calculations of the botanist de Candolle, has it looked down on the generations of men that have lived and died and passed away. It is about forty-seven yards in circumference at its base, while its branches afford shade to a circular area of one hundred and forty yards. Its huge stem, called the seven brothers, is divided into a number of branches, seven of which issue from below the present surface of

the soil, while seven do not divide till they rise a few feet above. The interior of one of these divisions of the main trunk has been hollowed out by fire and fashioned into a coffee-shop in which fourteen or fifteen persons can be easily accommodated. "It is," says an enthusiastic Frenchman, "a temple of verdure whose leafy dome rests amid the clouds." And here nine hundred years ago, in this great temple of nature, while the choirs of birds sang matin masses in response, tradition tells us that Godfrey de Bouillon gathered together his crusading host and offered up a solemn thanksgiving to the God that had brought them thus far safe upon their way. And we may well believe that as the warlike bishop, Adelhemar of Puy, elevated the host and blessed the kneeling multitude, the cry once more arose and swept from rank to rank, till with one loud shout the whole vast army, six hundred thousand strong, joined in "Dieu le volt! God wills it! God wills it!"

The cypress is only found in Turkish cemeteries, being planted perhaps for two reasons: because its aromatic resin helps overcome the effluvia arising from the shallow graves, and because its evergreen foliage, dark and sombre though it is, is the emblem of immortality. The Greeks and Armenians, instead of the cypress use the sycamore or, quite as frequently, the graceful *Pistacia Terebinthus* or turpentine. These grow to considerable size, one in the garden of the British Embassy measuring twelve feet in circumference, being over a hundred feet high and shading a circle of one hundred and eight yards. These trees, notwithstanding their size, are sometimes parasitic, and but a few years ago, just across the Bosphorus, on the Asiatic side, could be seen an enormous one growing out of a still larger cypress. There is another peculiarity of the tree; a species of insect, probably an aphis, forms a nest in the extremity of the leaves, by puncturing its substance, which then becomes fungous and swells into fleshy follicles of a bright scarlet hue, full of turpentine and having a strong resinous odor and clammy feel. They are so abundant sometimes as to give the tree the appearance of bearing rich flowers or fruit.

Another variety of this tree, the *Pistacia Lentiscus*, yields that pure, transparent gum, the mastic, used by the natives for

chewing purposes, to preserve the teeth and sweeten the breath. It is also used by the Greeks to improve their brandy made from grape-skins. It is procured by making incisions in the bark of the tree, the resin exuding in clear, tear-shaped drops. So highly was the product of the island of Scio esteemed, that the inhabitants were compelled to pay an annual tribute of one thousand pounds for use in the Sultan's Seraglio.

The olive is grown over a very wide area, especially in Asiatic Turkey and the Mediterranean islands. An olive orchard in the flowering time is one of the most beautiful sights in the world; the gnarled and twisted trunks, hoar with age; the short, oblate, slightly curled, silvery leaves; the branches fairly bending beneath the weight of the snowy petals, and the ground beneath and around white as with flakes of snow. Job says, referring to this peculiarity of its shedding its blossoms, "He shall cast off his flowers as the olive." Next to the cereals it is by far the most important agricultural product of Turkey. Its berry, pickled, forms the chief article of food; the oil, produced from its pericarp, seasons most of the dishes, and keeps alive the light that cheers the winter's gloom; its wood, close-grained and hard, takes on a beautiful polish and is very highly prized; while its bark and leaves, possessing certain febrifuge principles, are much sought after by the leeches of the country. The tree is slow in reaching maturity, but after the fifteenth or sixteenth year it bears on indefinitely and seems never to lose its vitality. There are trees in the garden of Gethsemane estimated to be over a thousand years old, still in full sap and vigor. It is of all fruit trees the hardiest, for scarcely any amount of mutilation, any severity of frost, or even sharp scorching by fire, suffices to destroy its life. "So long as there is a fragment remaining, though externally the tree looks as dry as a post, yet does it continue to bear its load of oily berries, and for twenty generations the owner gathers fruit from the faithful old patriarch. This tree also requires but little labor or care of any kind, and if long neglected, will revive again when the ground is dug or ploughed, and yield as before. Vineyards forsaken die out almost immediately, and mulberry orchards neglected run rapidly to ruin; but not so the olive. Though they may not have been attended to

for half a century, yet they continue to be a source of income to their owners."

These peculiarities Virgil observed and carefully noted in his Georgics nearly two thousand years ago: —

"But on the other hand, no culture needs
The olive tree at all; not it the knife
Forthcurved expects, nor clinging hoe, when once
It in the field is fixed, and bears the breeze.
To it the earth, its bosom loosened up
By furrows of the ploughshare's hook-like tooth,
Sufficient moisture gives, and gives the plough
Returns of weighty fruitage rich and ripe."

Georgic, II, 420.

"Why! cleave an olive tree's dry stump, and, strange
And wondrous strange to tell, an olive root
Will from the dry wood come!"

Frequently a whole village will unite and plant a grove in common. Then not even the berries that fall to the ground are allowed to be picked, till a proclamation is issued by the head man of the village or the governor of the province. A tree yields from ten to fifteen gallons of oil, and the profits are about one hundred dollars to the acre. It is claimed that the tree bears only every other year; but this is due probably to the vicious manner of gathering the fruit, beating the branches with long poles to shake off the berries, and, in so doing, bruising and destroying the tender buds that are setting for the next year's crop.[1]

The husks with which the prodigal son would fain have filled his belly, and which Scripture says the swine did eat, were not after all such very poor fare. Many a repentant sinner might go farther and fare worse. They are the fleshy pods of the locust tree (*Ceratonia Siliqua*), a leathery brown when fit to eat, some six to eight inches in length, containing a spongy, mealy pulp, of a sweet and pleasant taste in its ripened state, and in which are imbedded a number of shining, brown seeds, very hard, and somewhat resembling a split pea. These seeds are of no value

[1] Thomson, The Land and the Book.

whatsoever, on account of their bitter flavor; but the sweet pulp of the pod, when dry, is extensively used as an article of food, particularly among the laboring classes. In Syria it is ground up into a coarse flour, and a species of molasses made, which is used in the preparation of different kinds of sweetmeats. As food for horses it is exported in large quantities to the south of Europe. Into this country and Great Britain it finds its way, under the name of locust beans or St. John's bread, receiving both names from the ancient tradition that they are the "locusts" which formed the food of John the Baptist in the wilderness. The tree is cultivated extensively in all the countries bordering the shores of the Mediterranean, both for its food-producing qualities, and its wood, which is hard and susceptible of a fine polish. In size and manner of growth it resembles an apple tree, but is more bushy and thickset. It yields a prolific harvest, and it is not unusual to see a tree bearing over half a ton of green pods.

One other tree deserves mention, not on account of its food-producing qualities, but for its importance in a commercial point of view. It is the shrub oak, the *Quercus Aegilops*, which, growing wild on the mountain slopes and rugged steeps, where nothing else will grow, gives employment to hundreds of men, women, and children, who, in the season, go out to gather the acorns. These are brought down in sacks to the nearest seaport, whence they are exported, thousands of tons annually, under the name of "valonia," to be used in the tanneries of Europe. They readily command eighty to ninety dollars a ton, and from the seaport towns of Smyrna and the islands adjacent, forty thousand tons have been sent to England alone in a single year.

The wild olive, *Elaeagnus angustifolia*, grows abundantly in low situations and humid soils. It has more the habit and appearance of a willow than an olive, though the under side of the leaf is hoary and sometimes quite silvery. The fruit is dry, mealy and saccharine, and retains for a long time its usual size and form. It is sold extensively in the markets.

The *Acacia Julibrissin*, though not a native, is found in every garden in and around Constantinople. The foliage, though not sensitive to the touch, is highly susceptible to the variations of

the atmosphere. On a bright day the dense pinnate foliage gives a thick shade, but if rain threatens, the leaflets close their under surfaces together and the tree seems denuded of leaves. The beautiful, large clusters of stamens of bright pink color and rich silky texture make it an especial favorite among the Turks who have given to it the poetic name of Gul Ibrisim or Silk Rose, and from this has arisen the specific botanical name of Julibrissin.

The *Smilax excelsa* runs riot in all the woods covering the hill on either side the Bosphorus. It climbs to the top of the highest trees and descending in streaming branches forms a lofty green wall by the roadside. In autumn, loaded with rich, red berries, it is wonderfully beautiful.

The cherry, a pale, amber-colored, transparent variety, grows wild in the woods of Asia Minor. The flavor is delicious. The peculiar fact about the trees is their great height, the lowest branches being thirty to forty feet from the ground and the whole tree measuring seventy to ninety feet.

Other fruits abounding are apricots, figs, walnuts, plums, medlars, chestnuts, and filberts. The pears and apples are not worth mentioning. The fig trees grow to very large size. The trunk of one standing in my father's garden was about the circumference of my body, and in its branches I used to sport in my boyhood's days. The apricot trees were likewise large, the size of our largest apple trees, the fruit more nearly the size of the peach and more juicy than those grown in this country.

Among the shrubs, one of the most beautiful is the redbud or Judas tree (*Cercis Siliquastrum*) which grows in profusion on every hillside. As you descend the Bosphorus in the early spring, the mountain slopes on either side from the water's edge to the very summit are ablaze with its bright, red blossoms, while interspersed are the beautiful flowers of the almond. The buds are gathered and used with other raw vegetables by the natives in salads to which they lend a charming color and flavor.

The *Rhamnus Paliurus* or buckthorn is the common hedge in Asia Minor and forms a most impenetrable hedge. It is covered with spines which stand in pairs, one being straight and pointed and very sharp, the other hooked so that once any portion of a person's dress is caught, the whole soon becomes engaged and

it is very difficult to tear oneself loose. Like the "wait-a-bit thorns" of Africa, once caught, there is no hurry in getting away. It is popularly believed to be the plant from which our Savior's crown of thorns was made. It differs very materially from the *R. Spina-Christi* in the membranous wing surrounding the seed vessels. In fact these seed vessels are its most marked characteristic, for when fully ripe, they hang in profuse clusters of a vivid light-green or yellow, giving the tree the appearance of being clothed with rich flowers.

The strawberry tree or Arbutus belongs to the heath family or *Ericaceae* to which belongs our common trailing arbutus. The species, I am inclined to think, is the *Unedo*, but I am not certain. At any rate it is the one mentioned by Virgil in his Third Eclogue: "Moisture is grateful to the sown corn; the arbute to weaned kids; the limber willow to the teeming cattle." It is a shrub eight to ten feet tall with fruit fleshy, five celled, many seeded, dotted with little projections having the resemblance of a strawberry. The leaves are smooth and shining, oblong-lanceolate, more or less serrated. The flowers are white, growing in clusters, each separate flower bearing a resemblance to a lily of the valley. The fruit of all the species seems to possess a narcotic influence and wine is made in Corsica from the *Arbutus Unedo*. The name strawberry tree in the United States has been applied to the *Euonymus americanus*, a very different plant of an entirely different order. I think it does not grow wild, at least, I only recall seeing it cultivated in gardens.

The *Vitex Agnus-castus* in company with the oleander is found on the banks of all the rivers in Asia Minor. The pink and lilac blossoms form a beautiful combination in color, while their fragrance fills the air. The *Agnus-castus* derived its name from being carried by the priestesses in the festivals held in honor of Ceres. To this day certain virtues are ascribed to it.

Of the numerous flowers growing wild on the hillsides of the Bosphorus, those coming most prominently to my remembrance are beautiful anemones, red, white, pink, and yellow; three kinds of thistles, pink, purple, and yellow; single hollyhocks of great diversity of color; forget-me-nots and English daisies; poppies flaunting their blood-red banners amid the pale lavender of the

flax fields; white snowdrops and bloodroots pushing up their delicate flowers, the sign and symbol of the coming spring; while Scotch heather, wild thyme, and lavender made the air redolent with their spicy fragrance. A species of *Erigeron* or fleabane, which is used (from its strong odor) to keep off noxious insects, lights up with a ruddy glow the parched and withered vegetation of the islands of the Marmora in the fall. The *Pancratium maritimum* abounds in all the sandy plains of Asia Minor. It propagates by seed as well as bulb. It is claimed to be the lily of which our Savior said, "And Solomon in all his glory was not arrayed like one of these." A gigantic *Arum* grows on the plains of Broosa, the flower reaching the height of four feet, its spathe edged with purple and the stem variegated like tortoise shell. In a little valley lying at the foot of Mt. Olympus is one of the most fragrant spots in the world. It is planted entirely with roses, of the centifolia, damascena, and moschata varieties. For here is manufactured that most costly of essences, the attar of rose. As it takes the petals of 100,000 roses to yield 180 grains of attar, you can readily understand how many thousands were planted in this garden. In mere sensuous pleasure, nothing can surpass this spot. You wander aimlessly about, lulled by the sweet notes of the nightingale, intoxicated by the fragrance arising from a myriad of flowers, the eye charmed by the wealth of color banked about you and only wishing that each sense might be multiplied in power fourfold, that you might in a fourfold manner drink in the pleasure of the hour. The valley is appropriately called Gul Hatistan or the valley of gratification.

You pass from this valley of peace and repose, where everything conspires to lull the senses into dreamy forgetfulness, into a place of wonderful commercial activity, into the great silk-manufacturing industry of the East. Broosa is one of the most beautiful and interesting cities of the Orient. It lies at the foot of the Mysian Mt. Olympus. The country around is volcanic in its origin and earthquakes are not infrequent. Within my own remembrance it has been almost totally destroyed. In the centre of the city rises a rocky eminence crowned with the remains of an ancient citadel. To supply it with water, a long sloping passage-way, descended by 150 to 200 steps, leads to the well or

spring found at the bottom. It is preëminently a city of baths. Fuel is not needed, for hot springs abound, and by their side are fountains of ice-cold water fed by the melting snows of Mt. Olympus. Fronting the city are miles of plain covered with mulberry trees, mostly of the alba variety, for the leaves of the nigra are not considered delicate enough to suit the delicate palate of the silkworm. It is a beautiful sight to see the tender care lavished upon these worms. They are tended by women who, twice or thrice a day, feed them with fresh leaves, brush out the droppings and remove the diseased or dead caterpillars.

These women take the most scrupulous care of their persons and clothing in order to have nothing offensive about them. It is said that in sudden cold they will even cherish the worms in their bosoms to prevent their being chilled. And this is not strange when you remember that the loss of their silkworms means the loss of their livelihood. The story of the introduction of this industry fifteen hundred years ago is an interesting one. Silk was at that time brought from China and was worth its weight in gold, pound for pound. Some Christian monks who had been for many years resident in China came to the court of the Emperor Justinian, claiming that the eggs of the silkworm might be imported safely. Commissioned by the emperor to undertake the enterprise, they departed on their long journey and returned after several years with the eggs concealed in a hollow cane. Meantime mulberry trees had been planted and soon the industry was started which has lasted until the present day.

The implements of husbandry are very simple and primitive. The ox yoke is made of two straight pieces, one above, the other below the neck, the top piece alone being hollowed. Two straight pins serve instead of the yoke to inclose the neck, a strong trunnel in the middle taking the place of staple and ring.

The plow is absurdly ridiculous. Take a pole about ten feet long, four or five inches in diameter at the butt, and by mortise and tenon unite this at a slightly acute angle to another piece of about equal size, sharpened and shod with iron to plow the earth, and variously provided with some sort of handle for the plowman's hand, and you have an oriental plow. It does not

turn a furrow; it simply scratches the earth to the depth of four or five inches, and then the ground must be cross-plowed in order to secure anything like an adequate preparation for the sowing. European plows, to which several pairs of buffaloes were attached, have been introduced at various times, but were soon given up on account of the difficulty of finding animals strong enough to draw them. The hope of success lies in the improvement of the breed, but there is something beyond this, for the best breeds introduced soon degenerate from lack of nourishment. The country must be better governed, property made more secure, before farmers will find it to their advantage to give their cattle more than the scanty grass they can pick up here and there on the parched hillsides. The improvement of implements will follow as a matter of course. The same thing is true of the ordinary horses; barley and straw alone and the treatment received through many generations have produced the small, wiry, enduring hack of Asia Minor, as far removed from the lithe form and airy grace of the Arab steed as light is from darkness.

The spade is triangular in shape, with a straight handle, longer than a man is tall. A few inches above the blade a piece of wood is mortised in upon which the foot is set to force the blade deep into the earth. The length of the handle enables the laborer to lay his whole weight upon the extremity and afterwards use it as a lever in order to raise a large quantity of soil, which he merely turns over. "Shallow ploughing, but deep spading seem then to be the two chief rules of Oriental agriculture."

The hoe has a broad blade, not flat, but slightly concave, the handle very short, compelling the laborer to crouch to his work. The sickle is about the same form as our own. The scythe, shorter, heavier, clumsier, the snath nearly straight with but one handle, the left hand grasping the snath itself. The blade has no curve worth mentioning. Fortunately for the back of the laborer, hay is in so little demand that the scythe is practically only used in the cradle, and that not by Turks, but almost exclusively by the Bulgarians. As you pass by the great wheat fields you will see men and women with their sickles slowly and laboriously reaping

the golden harvest. Ask them whether they could not do the work much more rapidly and easily with the cradle, and they will answer, "Doubtless." Ask them why they do not use it, and with a shrug of their shoulders they will reply, "Good Lord! it is not our custom." And *that* is the end of all controversy with an Oriental. To change the custom of his fathers is as impious an act as to defile the bones of his ancestors or curse his grandmother.

One is sometimes in despair of any progress in the Eastern world. The beginning must be made at the root. Educate the youth and they are as ready for improvement as any people. In some places on the rich banks of the Danube modern implements of harvesting have been introduced and the produce doubled, because the farmer is no longer afraid of sowing more than he can gather. The women do a great deal of work in the fields, and may be seen laboring side by side with the men. The position occupied by them may be fairly well illustrated by the following story: A gentleman riding one day in the country overtook a man who had laden his wife with a heavy bundle of sticks. He remonstrated with him, saying, "My good man, it is too bad that you should load your wife down in this way. What she is carrying is a mule's burden." "Yes, your excellency," the man replied, "what you say is true. It *is* a mule's burden. But then you see Providence has not supplied us with mules and it has supplied us with women." It is the same all through the East. Sir Thomas Munro, in his "Travels to the City of the Caliphs," relates as a reason why an Indian should be exempt from paying his tax, that he pleaded the loss of his wife, who "did as much work as two bullocks."

Stuart Wood, in a recent number of the Quarterly Journal of Economics, says: "The agricultural processes of different countries are among the surest indications of the condition of the laboring population. In Germany it is a common sight to see a cart drawn by a woman and a dog. Where labor is dearer and money more plenty, or the people a little easier, a horse releases both alike from their unnatural task. In the United States, where labor is dear, costly agricultural machinery is extensively used in spite of the smallness of the farms. It is much used in England

also, because there the farms are large; and wages, although lower than in the United States, still far exceed those of other countries. In Russia, on the other hand, in Turkey and in Asiatic countries, we find the rudest tools; baskets are used instead of wheelbarrows, wooden plows instead of iron ones, and gangs of spade men replace both the plows and the beasts which draw them. A part of this is no doubt due to sheer stupidity, but much is also due to the price of labor and the rates of interest."

The products of the soil are as various as the climate and geological character of the country. Fruits are abundant, of excellent quality, and extensively used by the whole population. Grapes are delicious, and within reach of the poorest, selling at the rate of two and three-fourths pounds for two or three cents. Apples, apricots, peaches, cherries, and plums have their localities of abundant growth, but no attention is paid to obtaining the best kinds, or improving those already possessed.

Of grapes, whoever has partaken of the famous "chaoush" from the Bithynian side of the Bosphorus, will forever eschew all others: thin skinned, small seeded, fine pulped, a dream, a delight, something to be talked about, *never* to find equaled. The vineyards of the Christians and the Moslems differ in one very important particular. The former, cultivate those kinds suitable for making wines; the latter, those that are best for food. While the one are making spirits, the other are preparing that grape molasses called "pekmez," which is extensively used. In it all manner of fruits are stewed or boiled and the preserves laid aside for winter use. With it savory dishes of quinces and meat, or chestnuts and meat are prepared, much relished by the poor.

The cereals of the empire do not differ much from ours. The exports are barley, maize, and wheat. Rye, oats, and millet give good results, and there are various other seeds of good native use. Looking only at the soil, climate, industrial population, and the rivers and coasts of her great inland seas, Turkey ought to be our formidable rival in the markets of Europe, but her state of paralysis is such that nothing is to be apprehended from that quarter. Destructive treaties with England and stupid

legislation on the part of her own government have reduced her to a state of hopeless bankruptcy.

Turkish agriculture and horticulture furnish all that the heart could wish in the shape of edible vegetables. All that we produce is there produced, with the exception of potatoes, which are imported from Europe; squashes of various kinds and measure unlimited; okra, spinach, celery; melons unrivaled in flavor and size; cucumbers of any length you choose.

Among the vegetables, several deserve special mention. The tuberous knobs of the roots of the *Cyperus esculentus* are eaten either raw or made into some kind of a preserve. It is called by the natives heavenly manna or "manna turano," is quite sweet but somewhat woody in texture and looks like a minute potato.

Two varieties of egg-plant are grown, one similar to our own and the other bearing a round, rich, dark purple fruit, called the apple of Sodom, because it is sometimes punctured by a minute insect, a species of cynips, which gangrenes the fruit and converts the inside into dry ashes while the outside preserves its plump and beautiful aspect.

The *Cicer arietinum* or chick pea, contrary to the other plants of the pea family, is distinguished by its serrated leaflets. The pea is of a bright yellow, half again the size of a large marrowfat. It is cooked with rice or other dishes, or is simply parched and sold in the streets to be eaten as we do peanuts. When freshly parched it has a peculiarly crisp, pleasant flavor. It is claimed to be the parched pulse mentioned in Scripture.

A dozen or more different species of gourd are grown for cooking purposes but I will only speak of the *Cucurbita clavi-formis* which reaches a length of seven or eight feet. It grows so rapidly when well watered that in an incredibly short space of time it forms a dense shady arbor under which the people sit and smoke. When young, not more than six inches in length, it is boiled and then stuffed with force meat and rice. This dish and meat balls wrapped in tender grape leaves and covered with a white sauce are exceedingly palatable. Owing to its rapid growth it has been thought to be the gourd of Jonah.

In opening this lecture I brought before you a picture of the most striking objects of nature as you approach the great city of

the East, and now as I close let me leave with you the impression that lingers still with me after the lapse of forty-three years as I sailed away into the unknown West. Behind me lay the city of Constantinople, each minaret and dome blazing with light as though shot with purest gold. To the east rose the majestic snow-capped peak of Mt. Olympus, its pure white crimsoned with the ruddy glow of the sun's last rays. From the mainland drifted over the spicy perfume of the heather and the thyme. The porpoises were gently sporting in the blue waters of the Marmora. As we steamed past the little islands of Halki and Prinkipo, around huge bonfires, the young men and maidens with hymn and dance were celebrating the summer solstice, leaping through the flames. A moment more and twilight deepened into night and the scenes of my boyhood's days had faded away into a memory of the past.

PRACTICAL NATURE STUDY FOR THE PUBLIC SCHOOLS.

BY MRS. CORA C. STUART JONES, ROXBURY, MASS.

Read before the Society, January 30, 1904.

Nature study in the past has been narrowly interpreted as the bringing of root, branch, and bud to the schoolroom to be examined in detail: specimen study unrelated to its environment. It is said that "any one who can show an old thing in a new light is sure of a willing audience," so let us see if nature study in its modern interpretation does not take on a new meaning.

Great changes have taken place in the industrial, political, and educational world. Progress calls for change in old methods. Labor and capital have locked horns in a fierce struggle. Politics rise to snowy whiteness on the crest of a wave, only to plunge again into the black trough of the sea. No less does education feel the impulse of a mighty movement, resistless as fate, bearing it on to a new life.

Education has been formal and linguistic. To master the printed page has been its object. Today educators realize that something is wrong with the system, that a new inspiration must be found, and on every side we see a tendency to return to nature and simplicity.

The old system of *knowing* is giving place to the new system of *doing* and the *do-less* child of the city must be taught the handicraft which expresses the spirit within. Through action he must create, express his individuality, and produce something for the progress of civilization.

In adult science we have studied dead things too long. Science teaching dependent upon cabinets, stuffed birds and dried grasses must be replaced by field lessons, which means that our public school children shall be taken by classes to the shore and country, there to study birds in relation to insect life and the

preservation of forests, to study the toad as the salvation of the garden, to know soil and the reason for its productiveness. In fact, to know nature at first hand, and through intimate acquaintance and increased interest, to dignify farm labor and add a new interest to the vacation period of the city child.

Nature study means out-of-door life as opposed to indoor study — nature and not science.

Prof. Bailey says "Nature may be studied with either of two objects; to discover new truth for the purpose of increasing the sum of human knowledge — this produces scientists and specialists — or to put the pupil in a sympathetic attitude toward nature for the purpose of increasing the joy of living." This enriches our lives whatever our business or profession. "Nature study is spirit. It concerns the child's outlook on the world." "The best thing in life is sentiment born of accurate knowledge." More than any other recent movement, it will reach the masses and, by uplifting their ideals, methods will change.

I quote freely Prof. Hodge of Clark University and Dr. John Dewey of Chicago University, for these men practise the sermons they preach, and I believe, interpret truly the spirit of the New Education. Prof. Hodge's book on "Nature Study and Life" should be used in every public school. It is contagious in its interest and tells us practical ways of giving to the child the sweet and simple spirit of nature study. Universities, special schools and individuals may be leaders in new thought but, from the children of the public schools must come that quality of work which lifts science on to a new and broader plane.

Our curriculum is overcrowded. Practical nature study with its message of simplicity and action — two attributes of childhood — is through field work, gardening, manual training, cooking and sewing, and the schoolhouse as a social center, responding to the natural impulses of the child, and will surely subordinate and simplify the complex formal methods of today.

No better definition of nature study can be found than Prof. Hodge's, which is "Learning those things in nature that are best worth knowing, to the end of doing those things that make life most worth living"; in brief, knowledge in use, the active method opposed to the passive.

Life means combat and struggle. From earliest times man has brought into submission, fought and killed the lower animals. It is for nature study to direct that struggle, to teach which bacteria, insect and animal, are valuable or harmful; these to be studied out of doors in their natural environment, rather than as specimens in the schoolroom. Such knowledge is a valuable possession. Creative spirit is aroused. The economic necessity of such knowledge is apparent in the devastation of our crops alone. The study of it has great human value and it eliminates the desire to kill for sport's sake, substituting the camera for the shotgun; seeking right as opposed to wrong, construction opposed to destruction, and strengthens mental and moral force of character. This first-hand knowledge of animal life remodels our game laws and makes it possible to have squirrels and birds in our parks, the possession of the people rather than of hunters and collectors.

"What the best and wisest parent wants for his child that must the community want for all its children." We ask modern nature study to give back to the child what the change from agricultural to industrial life has taken from it and, in the rush of civilization, to find that peace which passeth understanding and the happiness that follows interest in one's environment. It seeks to give to the child becoming a slavish imitator within the limits of brick and mortar the creative power, a broad human sympathy, keen and accurate observation, unselfishness, and a large sense knowledge.

In the agricultural life the farmhouse was the center of activity in which was carried on the typical forms of industrial occupation. Children helped to shear the sheep, card the wool, and ply the loom. No button was pressed to flood the house with electric light but, from the killing of the animal to the dipping of the candle, children shared the labor. The firewood cut in the forest, the churning of butter, and cobbling of boots were to the children a personal concern.

We cannot overlook the factors of discipline, of character building involved, training in responsibility in habits of order and industry, prompt obedience, and the obligation to produce something in the world, and to do his own part faithfully in

coöperation with others. There came the intimate acquaintance with nature at first hand, constructive imagination and logical thought.

No object lesson given for the sake of information can compare with the acquaintance with plants and animals gained by actually living among them. The little red schoolhouse with its three Rs gave them the linguistic knowledge of their time supplemented by the activities of the home. Today the factory and apartment-house child needs a schoolhouse of three Hs: head, hand, and heart.

The city child taught to avoid the laborer and his handicraft learns contempt for labor and loses the sympathy induced by keen observation. True the city youth gains toleration and a breadth of social judgment, but why, when a Chicago firm advertised for one hundred boys and two hundred applied, did it choose the country bred. Because those were not afraid to work. It is said that "City life wears itself out in three or four generations unless rejuvenated by fresh blood from the country. Humanity like giant Antæus renews its strength by contact with mother earth.

Educators, realizing that primitive industries cannot be reinstated, strive to give the child contact with the earth without the early hours or nerve-straining labor of the farm. In England the Reddy school successfully trains the senses along the line of primitive industries, in gardening, swimming, and out-of-door sports. Scotland carried the idea to extreme. Boys were thinly clad and lived out of doors in all seasons, devoting a few hours to book study. The parents protested that they did not send their children to be experimented on like guinea pigs, but actual measurements and statistics showed an increase in physical strength and mental activity, and the protest subsided.

Mr. Bradlee of Chicago has founded an ideal school in which the Christlike spirit prevails, and the hardened little criminal from the street is by magic transformed into the self-respecting scholar. Here "one former is worth a thousand reformers."

In these schools the community spirit is cultivated rather than the scholastic; that which makes the child a law-abiding citizen and a good neighbor.

Scholarship is not the ultimate aim of our school population. Scarcely one per cent of the school population attains higher education; only five per cent attains the high school. They do not seek intellectual life. Their problem is work, and the school a tool with which to earn their bread and butter. Therefore, if our schools through activities appealed more to their dominant interests, the hold of the school would be more vital and prolonged.

Intellectual life should not be the sole aim of the school, but each child should be trained as a member of a small community, filled with the spirit of service and the power of self direction. His intense activity needs no repression but intelligent direction. Everyone who has trained a family of children knows that work and not punishment is the cure for mischief. If the restlessness of the schoolroom found its outlet in a fair proportion of hand work we would hear less of discipline. Only last week a little boy of seven told his teacher in basket weaving that he had watched the clock all day until it was time to come to her.

The *doing* side of life must have its fair proportion of hours, and training in accuracy must fit pupils for life work. Ideal, intellectual education is not to be undervalued. The few who attain it have ample opportunity in the high school and university. The elementary pupils need education that gives them interest and happiness in their environment. We need to emphasize the community spirit as opposed to the selfish absorption of facts.

Nowhere is the community spirit better trained than in the school garden. Here is coöperation, natural division of labor, unselfishness. In the schoolroom it becomes a crime for one child to help another; in active work assistance is not a charity but an exchange of ideas, and the prize is awarded, not to the one who has absorbed most for himself, but to the one who has done the best quality of work, the real standard of value in any community. Gardens appeal more to the city child than the country bred, whose world is a garden. Knowledge begins in wonder. Every discovered fact turns up a dozen mysteries. Contrast is a potent cause of attention, a stage whisper following a loud tone, a sour taste, a sweet one, charm of country to city

children, the spring flowers after the snow. France allows no school-yard plan without a garden spot and eighty-one thousand gardens lie between Sweden and Switzerland. The benefits are past the need of demonstration, yet in our city the few school gardens we have are supported by the Horticultural Society, Civic League, Twentieth Century Club, and private purses. If we cannot have gardens in all our school yards we can plan for the new school yards. We could have an ideal vegetable garden in a corner of our Common where classes of children could visit for observation. Our Public Garden could have less of exotic bloom and more of the common flowers of garden and field, daisies, buttercups, and wild roses. Bird food and nut trees would make it a home for songsters and squirrels and a part of our garden, at least, would be a paradise for the vacationless child. Vandalism is the direct result of this lack in our education.

It is a marvel that when school gardens have proven such a benefit to education abroad, and when clubs and organizations have accomplished what they have in city and country schools, and when individually so many of our school committees believe in their value, that our educational system makes no provision for either school gardens or field work for the children. The pressure from the university and the kindergarten, the top and the bottom, will soon force it through the elemental school. Why not open the door for it before it breaks in of its own weight?

A brewer in Chicago offered a vacant lot next his brewery for a garden. It was put in condition. Tenement-house children were given portions to plant, under instructions. To avoid vandalism, seeds of vegetables and flowers were given freely in the neighborhood. Children left the streets for the garden. No mature vegetables were stolen, but in pots and boxes throughout the district, plants and flowers testified to general interest. The brewer said he could not renew the experiment, it was too expensive, as he spent most of his time at the window watching them.

Referring again to Prof. Hodge, I speak of his garden planned, I think, to appeal to the deepest interest in children because it is neither a vegetable or flower garden, but a life garden. Its flowers and bloom give play to the artistic fancy and imagination

of the children. Its nut and fruit trees and berry-bearing shrubs inspire interest that centers in productiveness, and in the animal, insect, and bird life appeal to the very heart of the child. Freedom and motion are dear to children. Every child longs for the freedom of the bird, to hop and fly about at will.

This garden was a corner lot of waste land in the City of Worcester. One corner is planted in sunflowers, a bright golden corner, the delight of children and seed-feeding birds. In the center is a shallow fountain basin, alive with polliwogs and fishes, feeding on young plant life supplemented by dog biscuit; the water black with the little wriggling bodies of polliwogs. Here the children see the development from egg to toad, nature's scavenger without price; realize the necessity of pure water and natural food; understand the work of purification done by snails; and when later, in the cool earth under a board, resting from their labors of fly and insect catching, the children find the toads, the desire to kill them will have passed away. Near by are rose bushes with plant lice. The boys are taught to catch ladybugs and put them on the bushes, where they can be seen rapidly gathering their food. They will work harder to catch the bug and cleanse the bush than the average boy to chase and kill the butterfly.

The most interesting inhabitants of this nature garden are the birds. In a shaded, sheltered corner, an earthen bowl for bathing, filled with sand, stones and clear water, rests on a four-foot post. Beside it is a pan of mud for robins' nests, and neighboring bushes are hung with thread, string, and wool. All about the garden are growing trees and shrubs suitable for bird food: mountain ash, hackberry, wild apple, scarlet elder, mulberry, and black cherry. Is it not natural for birds to stop here in their flight to enjoy such abundance and, once having stopped unmolested, to remain? At midday the bathing bowl is crowded with eager bathers and reminds one, to quote Prof. Hodge, of the "next-next" in a barber's shop on Saturday night.

The air is filled with the sweet notes of robin, oriole, bluejay, and martin, but nowhere do you hear the sparrows' chatter. The people of Worcester have made it possible for native birds to multiply by wisely and humanely exterminating the English spar-

row. During the months between December and March, when the native birds had flown, they were fed on poisoned grain and given a quick and painless death. An expenditure of $2.40 for every 600,000 sparrows has given to Worcester quiet and cleanliness about the houses, sweet notes of numberless native birds, trees and vegetation unusually free from insects.

Little children playing in the sand pile or working in the garden, what have they learned? To love nature in a true and simple way, to know that the birds are filling the air with music and saving the foliage, that the toads are patrolling the grounds and keeping the soil sweet, that the ladybugs are caring for the roses, the polliwogs are purifying the water, little dogs in the kennel are playing police, that the shrubs, trees, and flowers are giving their treasures, food to the birds, shade to the children, beauty to the world.

What practical benefit has come from this garden? The spirit of love and kindness has entered into the public schools, hundreds of boys have laid aside sling shots to build bird houses. Vandalism and heedless destruction of private gardens have greatly decreased. In the immediate neighborhood there was an orchard of plum trees, fruitless and misshapen, where the insects and a disease called the black knot held high carnival. A boy asked permission to restore the orchard. He worked faithfully for several seasons, inspired by practical instruction and interest growing out of his own observation. Trees were pruned, soil nourished, disease removed. Today it is a fruitful orchard of beauty and blossom. Boys in the neighborhood caught the spirit. Flower gardens, neatly bordered walks, well kept lawns and bird houses testified to hours of well-spent energy that might have sought channels of destruction and law-breaking. It is said that every plum tree in Worcester has been restored to fruit-bearing vigor.

What can be done in one city can be done in another. Let our boys in manual training make bird houses and be taught that the world would become a desert in nine years but for the insect-eating bird, that 5000 eggs of plant lice were found in the crop of one chickadee. Then, boys will not destroy birds' nests. Tell them how the frog purifies the water for cattle and what the

toad means to the garden, and they will not cover the spring pools with sling shot and gun, but spend their energies gathering eggs to be hatched in glass bottles.

"Children's boundless activities find their outlet in destruction because of their ignorance. Give the average child the rudiments of knowledge concerning the uses of our plants and animals and their destructive energy becomes protective."

No better illustration can be found than occurred in Worcester. One day in the spring Prof. Hodge found on the shores of a marsh pond the mangled bodies of three hundred frogs and toads left there by a gang of street boys. Indignant he started for City Hall to notify the police, but conceived a better plan and sought the University. From there he sent a circular letter to all the public schools, offering money prizes for the best composition on "The Uses of the Toad." Hundreds of school children responded, rewards were given, and not a dead frog has since been found in the vicinity.

Why should the toad be studied by children? Because it is the commonest animal we have and costs nothing for specimens. They are terribly abused, and instruction brings about moral culture. Its life history from egg to tadpole and from tadpole to frog is exceedingly rapid and easily observed, and its life-work is of great human importance.

Aside from bacteria, insects are the worst enemies of man and, since they cause a loss of $400,000,000 annually, we should educate the community to intelligently discriminate between those which by cross pollination give us our most valuable fruits, and those which divide the product of the farms. The loss from insects for Massachusetts is $10,000,000 annually. One toad can catch eighty-six house flies in ten minutes; moths, bugs, worms, weevils, and snails in countless numbers are consumed. If we could have plenty of toads we could save at least $1,000,000. There is much that makes the study of the toad worth while to children and adds new interest to country life.

The children also planted nuts on land where permission was given by the owners, and today little groves of nut-bearing trees are of absorbing interest.

The child who grows a seedling tree in the school window box

or in a little tin can of its own, and who transplants it in the school garden or by some country wayside during a field day, will have an abiding interest in its growth. The love of forestry will have been planted in the child's heart.

Peach seeds are distributed free from Cornell and they grow four feet in one season. "Rather than send to jail the boy who destroys your peach tree, induce him to raise a peach tree, for the production of property places the boy on the side of law and order."

What we need is an appropriation for field work that it may become a part of the regular course of instruction, the money to be spent for car fares to take the children out of the city during the spring and fall terms, and a public sentiment strong enough to arouse the teachers to an appreciation of the need of the out-door nature work in the development of character and community spirit.

The Alpheus Hyatt Memorial Fund is being raised in Boston for exactly this purpose. The income of this fund is distributed by the Superintendent of Schools to teachers who are best fitted to direct children along the lines of nature work, and many classes are taken to the country. Nature study can be taught without much knowledge if one sees accurately and infers correctly. It needs enthusiasm and sympathy.

All honor to the Horticultural and the Audubon Societies, and to the nature-story writers who are leavening the hard loaf baked in the hot ovens of formal knowledge. Let the public-school children come freely to your exhibits and there will be less destruction of flower beds in the suburbs. Give freely to the Memorial Fund that more children may visit the world's garden.

Public sentiment can demand that the highways and parks should, in part, be planted with a variety of bird-food trees, that there be a free distribution of mulberry, wild cherry, and berry-bearing vines to property owners who would plant them. Park ponds could be made breeding places if the banks were natural and sloping.

In spite of the hum of city life and adverse conditions, birds and squirrels live on our Common. How rapidly they would multiply if nesting material and food, bathing places and shelter

were provided. Fountain basins in our playgrounds and school yards, full of life so fascinating to children, would cost less than the Juvenile Court, filled with misdirected energy. It would cost less to remove the sparrows and multiply native birds than the costly spraying of city trees.

All sciences can be taught along nature lines — electricity, winds and tides, geography, human nature, and religion. Each of the five senses should be cultivated so as to give experience, constructive and positive.

Two geography lessons, one heard in the East and one in the West, remain as lasting impressions on one's memory. In a crowded schoolroom in the East the overtaxed teacher spent time and strength in keeping order. Shuffling of restless feet, dropping of pencils, disobedience prevailed, while in a remote corner a small boy was reciting the products of the New England States.

In the West the lesson was on the products of the South. The children were studying cotton and wool fiber and one group spent thirty minutes freeing one ounce of cotton from the seed. The wool was separated much faster and was found to be of greater length. They easily understood why wool industries appeared first in the South and why their grandfathers wore wool instead of cotton clothing. They also discovered that the wool fibers clung to each other and were more easily spun. Aided by suggestions from the teacher the children worked this out themselves, recarding it and preparing for spinning by simple devices easily made for the schoolroom.

The children were interested to hear all about the improvements up to the complete loom. They studied the fibers, the conditions of soil necessary for its growth, the places of manufacture and distribution, and the influence which these inventions had made upon humanity. The history of all mankind was centered in this evolution of the fiber into clothing, and the children who had handled it, who had seen the sheep from which the wool had been sheared, needed no discipline.

Keen interest prevented any disorder except that which is natural to a busy workshop. There was not complete silence. Hands and feet were not in exact positions. Perfect quiet is a galling

bond to a child and teachers of manual training and school activities all testify to the ease with which they maintain discipline. This method of teaching gives children real motives, experience and contact with realities.

Plato describes the slave as one who in his actions expresses the ideas of another man. In this industrial age when machinery performs so great a part of labor it is necessary that we shall express our individuality through our activities.

Study the lives of scientists who have given us our antitoxins, who have checked the ravages of insect pests; they were keen observers and knew the habits of life at first hand.

Consider the insects that are sweeping over the country at present: the boll weevil of the South which lays its egg in the boll center, later to eat its way out and destroy the threads; the brown-tail moth, brought to Somerville on imported shrubs, and now costing thousands of dollars to exterminate, forces property owners to clean their trees in coöperation with their neighbors and to practise nature study in self-defence. If, from the first, public-school children had studied the pests out of doors and had been allowed to gather the cocoons, much destruction would have been avoided. Rochester has cleansed its trees of caterpillars by this means.

The Hancock School at the North End has for years demonstrated the value of true nature study. With no school garden, with no growing thing in sight except its one cottonwood tree, with no appropriation from the city, it has sent its hundreds of children out into the wide world.

The recent death of its master, Lewis H. Dutton, has brought an incalculable loss to thousands of the poor. Here the foreign-born child, scarcely more than a baby, with its clothes sewed on for the winter, unable to speak our language, enters the kindergarten. It is through nature work that his interest is first aroused to learn English. When he sees the fishes in the aquarium, the snails and the newts, he must express himself and ask questions. He finds on the walls pictures suited to his intelligence, birds, animals, and flowers; not the grim faces of warriors and busts of patriots unrelated to his experience.

Attractive as are the pictures of flowers and field they recall

no memory of loved brooks and meadows until he reaches the grade where, by the well-laid plans of Mr. Dutton, assisted by private purses, he is taken into the country and his sense-knowledge grows. From real experience mental pictures will ever after be recalled at the sight of a picture of bird or meadow.

We of the avored class, whose memory at the sight of a flower recalls childhood days and long hours spent in the mountains, cannot appreciate the emotionless condition of the mind of the tenement-house child until he has this experience. Who can measure the civic pride, the patriotism and the elements of good citizenship that have been stirred in the hearts of our foreign population by the experiences of field day in the Hancock School. How many thoughts have been turned into healthy channels and how much of education has been vital by the doing.

May not mothers, fathers, and teachers interest boys to follow agricultural pursuits, to cultivate certain fruits and vegetables that will be profitable enough to compare with the excitement of city life, and make nature study not scientific names and the counting of legs, feathers, and scales, but knowledge of what work each form of life performs in the economy of nature.

Prof. Hodge says "Original research is the breath of mental life; in the ideal school it will have a central place." "To allow a child to grow up without planting a seed or rearing a plant is a crime against civilized society and our armies of tramps and hoodlums are among the first fruits of an educational system that slights this important matter." "Pure air and pure water, forests, game, birds, and fishes add to the world's wealth. Pests, noxious weeds, and injurious insects menace the public good. It is the business of the public school to teach the economic value of these things.

The San José scale, the gypsy moth, the chinch bug hold in their power the forests and wheat crop of the country. The remedy lies largely with the insect-eating bird. When we know that the codling moth destroys from 25 to 75 % of the apple crop, and costs the state from one to four million dollars annually, let us teach the children to spare the downy woodpecker and bat — the day and night police — for if they destroy but one female

daily from May until July, they will have saved 275 bushels of apples.

Let us consider what nature study will do for forestry. It has been said that "what we would have in the national life we must introduce in the public school." What greater need have we than to save and increase our forests. Fire and careless lumbering are robbing us of our inheritance. From the redwoods of California to the Christmas trees in Maine our woodlands cry out to the children to save them.

If the child in the elemental school raises his seedling tree, idealizes it with sentiment and song, plants it on Arbor Day where he can visit and watch its growth; if nature work leads him to study the tree from all points of view surely he will love and value the forests and wanton destruction will cease. Alice Freeman Palmer has said, "Give children large interests, and give them young."

Arbor Day should be celebrated in every school with song and poetry and sentiment indoors, and real tree planting out of doors. Mr. Morton of Nebraska, Secretary of Agriculture, conceived the idea of Arbor Day in 1872, and a resolution was passed that a day in April be set apart for tree planting, to be named Arbor Day; its object to avert treelessness, to improve climatic conditions, for the sanitation and embellishment of home environments, for the love of the useful and beautiful, combined in the music and majesty of a tree, as fancy and truth unite in an epic poem.

Forty-two states observe Arbor Day as a legal holiday and in many schools the day is appropriately celebrated, but it should be universally a day when children assist in the actual planting of a tree.

When we know that railroads, manufactures, and forest fires consume in the United States 25,000 acres every 24 hours, we cannot expect Arbor Day to replace the loss, but it will set in motion those ideas that will develop systematic forest management.

Let the young be taught that they herald an era of forest planters not of forest destroyers, for "enlightened public sentiment is better than a national police." Every graduating class should hear a few practical lectures on forestry. Boys could be called

Forestry Cadets and the magic of the name would result in less destructive camp and forest fires and careless abuse of young trees.

In the White Mts., on a rough mountain road, there is a large sugar-maple tree bearing this inscription:

"Most sacred tree that ever grew
True type of Him whom sinners slew;
From thy pierced side thou dost bedew
With sweetness, those who thrust thee through.
Now a new name I give to thee,
Be called henceforth the "Christus Tree."

Old and young have memorized the verse. Why should not such sentiments be hung on trees in our school yards, or upon especially noble trees in our parks to idealize and sanctify them?

In New York newly-planted trees bear this inscription:

"This tree is a friend to children, be kind to it."

One man tenderly cared for his new tree by watering it daily with water from ice-cream freezers and lived to repent his ignorance.

Brookline makes beauty perpetual by planting its new streets. Why does not Boston demand that its new streets be planted and that the old trees have better care. This is a part of the nature study that commences in the kindergarten and is expressed in our Outdoor Park Associations. We stand next to the foot of the list for wayside trees.

Lastly we turn to literature to find our greatest men are those whose intimate knowledge of nature has been their bond with all humanity. Such training of the senses as Shakespeare received will go far toward bringing in the golden age of education. Creative power comes directly from experience. We tell best what we have seen ourselves not what others have told us.

Shakespeare's real educators in picturesque and richly-storied Stratford were the dark forests of Arden and the flowered meadows, not the musty volumes in which scholars seek his inspiration. Shakespeare, the best educated man of any age, tells us that he learned from books only "words — words — words."

The spirit of the midland country breathes through his pages

and much of his work is idealized pictures of what he saw with his own eyes. His reference to natural objects is exact and faultless with but one exception, when he miscalled the color of the heart of one flower. Milton who knew the country late in life filled his writings with inaccurate statements. Like many of us, he "Passed through the streets of By and By and arrived at the house Never." Shakespeare constantly strengthened his verse by references to nature such as these:

"She never told her love,
But let concealment like a worm i' the bud
Feed on her damask cheek."

"And this our life exempt from public haunt
Finds tongues in trees, books in running brooks,
Sermons in stones and good in everything,
I would not change it."

As a bird student he knew the ugly eye of the lark and the beautiful eye of the toad and said,

"Some say the lark and loathed toad changed eyes."

"The eagle suffers little birds to sing
And is not careful what they mean thereby,
Knowing that with the shadow of his wing
He can at pleasure stint their melody."

"Kate, like the hazel twig,
Is straight and slender, and as brown in hue
As hazel nuts and sweeter than the kernel."

How many boys know positively the color of a swan's leg. Shakespeare tells us,

"For all the water in the ocean
Can never turn a swan's black legs to white
Altho' she lave them hourly in the flood."

"The southern wind
Doth play the trumpet to his purposes,
And by his hollow whistling in the leaves
Foretells a tempest and a blustering day."

And now to close I quote a paragraph from "The People of the Whirlpool":

"I am convinced that gardening is a truly religious life, for it implies a continual preparation for the future, a treading in the straight and narrow way that painful experience alone can mark, an absorption beyond compare, and the continual service of hope, love, and above all, of entire childlike faith.

"When the time had come in the creative evolution for the stamping of the perfected animal with the Divine image that forever separates him from all previous types, it was no wonder that God set man, in whom the perpetual struggle between body and soul was to take place, in a garden for his education."

Discussion.

Henry L. Clapp, Principal of the George Putnam School, Roxbury, spoke upon the subject of the lecture as follows:

Last Monday I was asked to collect for the St. Louis Exposition sample papers of work in nature study done in the schools of Boston. Accordingly during the week I have visited the schools where nature study has received attention. I find that the nature study in each school is very largely determined by the environment and the accessibility of the material to be studied, as it should be. I find also that, whatever one's own personal experience may have been, he can tell only a part of what should be told. The experiences of many persons on the same subject must be brought together in order to give an approximately complete statement of it. So I will give another phase of the subject so well treated by the speaker of the day.

During the last twenty years the pupils in the George Putnam School have studied natural objects — grass, mosses, lichens, leaves, blossoms, seeds and seed-vessels, wild flowers, vegetables, ferns, fruits, rocks, minerals, birds, and insects. These things have been studied in the schoolroom, the wildflower garden, the vegetable garden, and in Franklin Park. Every week of the school year the children have expressed their observations by drawing, painting, and writing. In no other hour of the week

do they work so interestedly, spontaneously, vigorously and successfully; no other hour has so strong an influence in their development. They like to draw what they see; a color-box is a treasure to them and nearly every pupil has one, and they are as ready with their pens as with their pencils or brushes.

One teacher has a troop of children up at five o'clock summer mornings in the Park studying birds; another gives them a thorough acquaintance with fifteen species of ferns; another has the children observe the glaciated rocks, the dykes in the pudding-stone ledge, and the stratified rocks; another takes her class out after a rain to observe the action of water running down Columbus Avenue; another takes out the five-year-olds to see the butterflies, squirrels, sheep, flowers, etc.; another gives two score of pupils exercise for an hour or two every week in the school garden; and so there is plenty of first-hand knowledge and first-hand material to talk about, write about, and represent in color.

Here is work from eight grades illustrating what has been done for many years. The papers are all first drafts directly from the children's hands.

The spelling, writing, and grammatical expression may be erroneous, the color representation may be crude, showing that teachers have something to teach and pupils something to learn, but the imperfections attest the genuineness of the work. The tracks of the children are not covered up; here is no fake work, but nature work; not of the ideal sort, but practical and practicable. Many forms of nature work recommended are impracticable for public schools as now constituted.

Prof. F. A. Waugh of the Massachusetts Agricultural College, Amherst, said that for a long time he had been much interested in the subject of nature study in the schools. The chief difficulty was in obtaining teachers capable of carrying on the work. There is great need of such teachers who are competent for this special line of instruction, but there always will be found one or two specially adapted for it.

He had no sympathy with the sentimental gushings of those who presented the subject with such expressions as, "Oh! the lovely, lovely flowers; the beautiful, beautiful birds." Such a method of treatment should be avoided.

In his work he meets with two classes of people; the farmers, whose education is derived from practical experience, and the professionally educated. Here are two sorts of education; what we need is to combine the two; the education that comes out of books and that which comes out of experience.

Miss Frances Zirngiebel said that the Massachusetts Horticultural Society had done a good deal for practical nature study in giving this opportunity of discussing the subject. Scientific knowledge is a necessity of modern life and nature study is a practical thing and not useless as some think it.

Hon. Aaron Low said that nothing was more important for the future generation than the study of nature. The garden is a book and even the study of a foot of soil will show marvels of interest. The study of nature can but broaden the mind.

Miss Brassil, supervisor of nature study, Cambridge, said she hoped to listen this morning, but if a word of hers would be of help she was willing to give it. The little folks take to nature study naturally; they love life and action and are interested in anything that has to do with nature. Nothing so teaches the child a regard for private property as personal ownership. Let the children own something themselves and they will understand the feeling that others have and respect their rights. The one thing needed is coöperation between school authorities and public sentiment.

Miss Gates, science teacher in the Hancock School, Boston, stated that seventy-eight classes in field work had been taken out during the year, the funds for car fares having been provided by private individuals. She thought instruction by this method produced valuable results.

THE ARNOLD ARBORETUM.

BY JOHN G. JACK, JAMAICA PLAIN, MASS.

Delivered before the Society, February 6, 1904, with Stereopticon Illustrations.

The botanic garden may be said to have had its origin in simple collections of plants for medicinal purposes. Our first authentic records seem to date no farther back than the time of Pliny, in the first century of the Christian era. Originally established for medicinal or utilitarian purposes, there later developed considerations of beauty, and still later, or within one or two hundred years, they have been maintained for comparative study and scientific investigations into plant life.

While in early times the collections were of a private or semi-private character, many are now the property of the people and of wide educational value. Of over two hundred which might be enumerated as existing today few are large or well endowed or of wide fame or importance, like the famous institution at Buitenzorg, in Java, and the great collections at Kew.

An arboretum may be considered as a specialized botanical garden, restricted to such plants as have perennial woody stems above the surface of the ground. Primarily intended to represent a collection of trees, it is now generally understood to include shrubs and woody vines or climbers, although a collection of shrubs is sometimes given the distinguishing name of fruticetum, while the ground occupied by woody vines or climbers may be designated the viticetum. However, as there are no strict lines which separate vines from ordinary shrubs or shrubs from trees, the general term arboretum is usually regarded as sufficient to include all. In a rigorous climate like ours this, of course, applies to hardy, woody plants.

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lease, which are very unusual, the principal parts are here given in the original form.

"This Indenture made the thirtieth day of December, in the year eighteen hundred and eighty-two, between the City of Boston, a Municipal Corporation in the Commonwealth of Massachusetts (hereinafter called the City), of the one part and the President and Fellows of Harvard College, a corporation established by the laws of Massachusetts (hereinafter called the College), of the other part.

Whereas, the Board of Park Commissioners of the City of Boston, by virtue of the authority conferred upon said Board by Chapter one hundred and eighty-five of the Acts of the Legislature of Massachusetts of the year 1875, and by the City Council of said City of Boston, by a certain written instrument of even date herewith to be recorded with the Suffolk Registry of Deeds, have taken and located as and for a public park that tract of land in that part of said city known as West Roxbury held by the College and by it dedicated to the use of the Arnold Arboretum, so called, together with certain adjoining tracts the property of other persons deemed by said Commissioners convenient and necessary for use in connection therewith, for the purposes and under the powers and limitations set forth in said Act and Acts in addition thereto and amendment thereof.

And whereas, by an act of the General Court of Massachusetts passed on the twenty-ninth day of March, in the year 1880, it was enacted that in case the said Board of Park Commissioners deemed it desirable so to take the said lands for the said purposes the City was thereby authorized to lease such portions of the said Arboretum and adjoining tracts so taken, as the said Board of Commissioners might deem not necessary for use as park ways and grounds to the College, to be held to the same uses and purposes as the said Arboretum was then held under the trusts created by the wills of Benjamin Bussey and of James Arnold, and for such a term and upon such mutual restrictions, reservations, covenants, and conditions as to the use thereof by the public in connection with the uses of the same under the said trusts, and as to the rights, duties and obligations of the contracting parties as might be agreed upon between the said Commissioners and the College. And the Board of Park Commissioners on the part of the City and the president on behalf of the College were respectively authorized to execute and deliver the said lease.

And whereas, the said Board of Park Commissioners deems such portion of the said Arboretum and adjoining tracts as is hereinafter described and leased to be not necessary for use as park ways and grounds and considers that the same will be better and more advantageously enjoyed and used by the public as a part of the said park if the same be leased to the College for the purposes of the said trusts and upon such terms and subject to such provisions with regard to the use thereof by the public as are hereinafter contained. And it has been agreed between the said Commission-

ers and the College that the same be leased to the College for the term and upon the mutual restrictions, reservations, covenants, and conditions hereinafter expressed.

Now this Indenture witnesseth that the City by virtue and in exercise of the power and authority given to it by the said act and of every other power and authority it hereto enabling doth demise and lease unto the College all that parcel of land delineated on a plan entitled "The Arnold Arboretum" . . . .

To have and to hold the premises hereby leased (hereinafter called the Arnold Arboretum) unto the College and its successors and assigns for the term of One Thousand Years from the date hereof without impeachment of waste upon and for the same trusts, uses and purposes as those upon and for which the said land held by the College for the purposes of the said Arboretum at the said time of the passing of the said act of the year 1880, was then held under the will of Benjamin Bussey and the will of James Arnold and a certain indenture dated the 29th day of March in the year 1872, and made between George B. Emerson, John J. Dixwell and Francis E. Parker, as trustees of the will of the said James Arnold of the one part, and the College of the other part, in which indenture the trusts provided for in the said will of James Arnold are declared in pursuance of the directions in the said will contained, yielding and paying therefor during the said term the yearly rent of one dollar.

And the City covenants with the College, its successors and assigns that the College and its successors and assigns shall peaceably hold and enjoy the premises hereby leased during the said term without any interference or control of the City or any person claiming through or under it. That the City will at all times save and keep harmless and indemnified the College and its successors and assigns, and keep the premises hereby leased free and discharged of and from all taxes and assessments of every description which during the said term may be assessed or payable in respect of or charged upon the premises hereby leased or any part thereof.

That the City will within a reasonable time make and finish fit for use of good sound materials and in a proper and workmanlike manner the driveways of which the sites and dimensions are delineated on the said plan and so marked thereon; but at a cost not exceeding seventy-five thousand dollars, and that the said driveways during the said term shall be repaired and maintained in a proper and substantial manner free of all charge and expense to the College and its successors and assigns. That the City will during the said term provide and maintain a proper and sufficient police in and about the Arboretum and the said parts excepted from these presents and the said roads, avenues, and parkway for the preservation of order and good conduct and the observance of the rules hereinafter mentioned or provided for. That no public street or highway and no steam or horse railway, or construction for like purposes shall be laid out through or over any part of the Arnold Arboretum except in such places if any and in such manner as the Park Commissioners and the College

shall approve. That if the water supply from the sources within the Arnold Arboretum which the College has heretofore enjoyed for use in the said Arboretum shall at any time be cut off, interrupted, or impaired by the City or its assigns the City will immediately provide at its own charge and expense an equal or superior supply of water for the like uses. And that if the College, its successors or assigns shall be desirous of taking a renewed lease of the said premises for the further term of one thousand years from the expiration of the term hereby granted, the City or its assigns will upon request and at the expense of the College, its successors or assigns and upon its or their executing and delivering to the City or its assigns a counterpart thereof, forthwith execute and deliver to the College its successors, or assigns a renewed lease of the said premises for the further term of one thousand years at the same yearly rent and upon and subject to the same restrictions, reservations, covenants, and conditions as are herein contained including the present covenant and so on from time to time forever. And the College for itself and its successors and assigns covenants with the City that the College will not commence or prosecute any action, suit or other proceeding against the City for the enforcement or recovery of any damages or claim which the College may have or be entitled to against the City by reason of the said taking of the said Arboretum land by the City. And that the Arnold Arboretum shall at all reasonable times be open to the inspection of the public as a part of the said Park subject to the rules hereinafter mentioned or provided for. Provided always and it is hereby declared that the City shall be at liberty to erect and maintain suitable gateways for entrance thereto upon any of the said excepted parts and to maintain gates there. And that no pavilion, kiosk, urinal, museum, greenhouse, stable, shed or other building (except as above provided) shall be erected or maintained within the Arnold Arboretum, or in any of the said excepted parts or in any of the said driveways or parkways without the prior consent of the Park Commissioners and the College. Provided also and it is hereby declared and agreed that the use of the Arnold Arboretum and of the said excepted parts and of the said roads, avenues, and parkways by the City and its assigns and the College its successors and assigns and the public, shall be subject to the rules contained in the schedule hereto annexed and to such additional rules as have been or may from time to time be agreed upon between the Park Commissioners and the College. But any of the said rules may be altered or annulled by agreement between the Park Commissioners and the College."

By this arrangement it will be seen that while the city builds and maintains the driveways and gravel paths, and polices the place, all other management rests with the officers of Harvard University. The city furnishes no money toward the support of the Arboretum excepting for road maintenance and police duty,

and neither can the general treasury of Harvard University give assistance, the regular work of the Arboretum being dependent wholly upon the limited income from its own endowment or donations from interested persons. Under the arrangement with the city the Arboretum is forever free from liability to be taxed or assessed.

In July, 1883, the construction of the first roadway was begun by the city, and it was only during 1894 that the road system of the Arboretum, as planned by Mr. Olmsted, was completed. In the latter year an additional tract of about seventy acres, from the Bussey estate, comprising what is known as Peters' Hill, was given by the college to the uses of the Arboretum, and within the next three or four years the city extended the roadway around it.

While the limit of cost to the city of the roadways in the Arboretum was originally placed at seventy-five thousand dollars, about three hundred and seventy-five thousand dollars were actually expended before the work was done. For this expenditure we have about three and one-half miles of telford and macadamized roads, five and three-fourths miles of gravel walks and seven entrances with substantial gates. Delay in road making and grading necessarily involved delay in planting large areas of the ground, especially as the roads were generally laid out through the best available tracts for planting.

In addition to the roads and gravel paths constructed by the city, the Arboretum has in the last two or three years maintained numerous grass paths which are much appreciated as affording agreeable walks and facilitating access to different parts of the collection.

About one-fourth of the total area of the Arboretum (over two hundred and twenty-two acres) is not available for general planting purposes because of its swampy or rocky character or because already occupied by old indigenous trees which it is not desirable to remove. Some otherwise available land has also been exempt from planting in consideration of landscape effects. The most attractive natural feature in the Arboretum is a rocky conglomerate bluff or small hill, not much over one hundred feet high above the road at its base, the north slope of which is covered

with native hemlocks, the most mature of which may be a little over one hundred years old.

The first raising of plants in the Arboretum and the beginning of its collections was begun in 1872–1873, but on account of delays in finishing roads and grades by the city it was not possible to do any permanent planting of trees in their botanical groups or orders until the Spring of 1886. In that year much was accomplished, and, almost every year since, additions have been made in the direction of completing the collections.

The general sequence of planting originally adopted was that followed by Bentham and Hooker in their "Genera Plantarum," a system then in use by most botanists; but conditions of soil unfavorable to certain families of plants and other considerations made it necessary to depart from following any strict classification as indicated in books. In the original scheme of planting the trees it was intended to have a single specimen of a species with ample room for development on all sides, and also a group of the same species planted more or less closely together. Some modifications of this arrangement have been necessary, but in general it has been followed.

For convenience in comparative study, and also because many of the species would not do so well if within the shading and otherwise detrimental influence of the trees to which they are botanically most closely related, a collection of different species of shrubs is kept separate and is arranged in rows or beds according to their botanical affinities.

This collection is duplicated to some extent by the planting of larger groups of important species along some of the driveways and walks, and some of the shrubs which generally attain inconveniently large size have been removed from the general shrub collection and placed in groups by themselves.

The collection of shrubs and vines available for comparative examination by the public contains about twelve hundred species and varieties. The collection of lilacs, which has probably received more attention from the public than any other group, contains ten or twelve species and about a hundred and fifty named forms or varieties, most of which are variations of the common lilac, *Syringa vulgaris*.

The collection of trees already placed in permanent position represents between four hundred and five hundred species and about as many varieties and hybrids, the latter mostly of horticultural origin. Most of the important groups hardy in this climate are now well represented, although the collection of willows, poplars and alders is not yet satisfactory. In the nurseries, of course, are many species and varieties in process of development for planting out in due time.

In regard to the scope of the collection of living trees and shrubs, it may be said to be the aim to bring together all those wild or aboriginal species or varieties from any country which will endure our climate, even including those species liable to some injury by our hot summers or cold winters. Thus tests of hardiness or acclimatization must be unending. It is not possible to include all the horticultural or garden forms and hybrids of these species. That is something which must be left to horticultural schools and to the commercial nurseries; the Arboretum aiming to show and preserve the types from which the so-called improvements in gardens have been derived, and by introducing new species to offer further opportunities for experimenting and creating improved forms. A few of the peculiar or superior variations may be maintained in the Arboretum collections in order to show possibilities of differentiation within the species. Our severe climate conditions will always prevent the acquisition of such a large number of species as can be grown at Kew Gardens, but some species do better here.

As illustrating what may be done in the way of introducing new species of plants, our native hawthorns may be cited as an example, although perhaps an extreme one. Ten years ago not over twenty species were recognized as native in the United States and Canada. Within the past ten years, however, a great interest has been aroused in this genus (*Crataegus*) and nearly five hundred species have been described as distinct, about one hundred and seventy-five by Professor Sargent, while Mr. C. D. Beadle of Biltmore, and Mr. W. W. Ashe, also of North Carolina, have named about one hundred and fifty each. If the same standard of specific differences is followed there remain hundreds of species to be described. Of course many of these will prove

of botanical interest only, but there is no doubt that the study will result in introducing into cultivation some new American thorns of ornamental or even economic value. Fully fifteen hundred different lots of young living plants of this genus, many of course duplicates, are now under cultivation and observation in the nurseries of the Arboretum.

The acquisition of a collection of living plants in an institution like this implies wide activities and usefulness in the matter of dissemination or distribution of species as effected through the medium of exchanges or actual gifts.

In twenty-two years, from 1880 to 1902, the annual reports of the Director show that there were sent as exchanges from the Arboretum 214,650 plants and cuttings and 15,547 packages of seeds, and there were received 96,813 plants and cuttings and 6,307 packages of seeds. This takes no account of many thousands of cuttings or samples of seeds taken by visitors or special students and not recorded.

The bringing together of a large collection of living species, making them better known to the public by giving opportunity for study and comparison, by publication of descriptions and general information regarding them, and by actual distribution, is naturally the first stage in the organization and development of any such institution as the Arboretum. But its work for the public good should not be restricted within these lines, but should be made to cover many phases of the life histories of the plants, and into such branches the work is likely to be carried in years to come. The formation of a collection will inevitably bring out self-evident features as to hardiness or acclimatization, but much may be done in this line by studying the behavior of the plants under peculiar conditions. The rate of growth under such varying circumstances is worthy of observation, and the question of longevity follows as a matter of course.

We know little about many of the stages in the life histories of our trees and shrubs; the study of diseases and remedies may be said to be endless and with great opportunities for usefulness, while the fascinating field offered for research in heredity, variation, hybridization, etc., is almost limitless in its possibilities. In scores of experiment stations, agricultural colleges, and botanical

laboratories in this country experiments and researches in the lines indicated are now in progress, and with its foundation and facilities established and at hand the Arboretum should be able to take and hold a leading place in advanced scientific work in directions in which those in charge of its administration have heretofore been able to do little.

Mr. Jackson T. Dawson, well known as a propagator of plants, and superintendent of the Arboretum since its inception, or when the first seeds were planted, in 1872, has by artificial fertilization produced many interesting hybrids, some of which are well known among horticulturists. Among these hybrids may be mentioned numerous interesting roses, such as "Dawson," a hybrid of *Rosa multiflora* and Jacqueminot; "William Egan," a hybrid of *Rosa Wichuraiana* and Jacqueminot; "Arnold," a hybrid of *Rosa rugosa* and Jacqueminot; and "Farquhar," a hybrid of *Rosa Wichuraiana* and Crimson Rambler. Several of these have been awarded silver medals by the Massachusetts Horticultural Society. Other hybrids of roses and other plants might be mentioned, but an indication of the line of work and possibilities may be enough.

Through the agency of the Arboretum many interesting species of trees and shrubs have been first introduced into cultivation at home and in Europe, while many others already existing in gardens, especially in Europe, have been made better known and more popular in this country.

As indicating the line of original introductions which have now become well known and popular may be mentioned *Syringa Japonica*, *Syringa Pekinensis*, *Rosa multiflora*, *Berberis Thunbergii*, *Cercidiphyllum Japonicum*, several kinds of ornamental crab apples, and many other more or less well-known species of trees and shrubs from Japan and China, besides others not yet so widely distributed species which Professor Sargent was able to introduce by his trip to Japan in 1892. The Japanese trailing *Rosa Wichuraiana* was popularized in this country chiefly through the agency of the Arboretum, though previously known in Europe whence it was introduced into Franklin Park and the Arboretum at about the same time but under another name. While individuals or firms, like Veitch of England and Lemoine of France, may have done more in introducing new species to

cultivation or in producing hybrids the Arnold Arboretum can claim an important place in this work.

The formation of an herbarium and library is a necessary accompaniment of the living collection where scientific work is to be done, and in the thirty years since its beginning there has been brought together at the Arboretum an herbarium of woody plants not excelled by any in the country in this specialty and particularly rich in illustrating the arborescent flora of North America, due largely to the travels of the Director and to the collections of his correspondents in all parts of the country when gathering material and data for the Tenth Census report and the "Silva of North America". The work on the Tenth Census and the collections by government agents in connection with that undertaking contributed largely toward augmenting the herbarium, which received most of the material thus secured, and also toward making the publication of the "Silva" possible within a reasonable time and expense, although much additional exploration and collecting was necessary after the closing of the Census work and during the preparation of the fourteen volumes of the work on our North American trees.

Thus, although the Census work was under the auspices of the United States Government, and the "Silva" was the private enterprise of the Director of the Arboretum, the Arboretum benefited very greatly in its collections, and also in prestige, from the prosecution of both undertakings. During the same time, also, Mr. Morris K. Jesup, of New York, was having the magnificent collection of woods formed which is now in the American Museum of Natural History in that city. The bringing together of this collection was under the supervision of the Director of the Arnold Arboretum which again was benefited by great numbers of herbarium and other specimens secured by collectors when visiting and exploring little known or not easily accessible regions on Mr. Jesup's behalf and at his expense. These three enterprises, managed and completed under direction or by enterprise of the Director of the Arboretum, have been fortunate circumstances for our institution in regard to making its herbarium today one of the best and most complete in the country in illustrating the North American trees and shrubs, and in that respect

likely to be equalled or surpassed only by the National Herbarium at Washington. In this manner the building up of the herbarium has been greatly aided without involving a great outlay in engaging special collectors, otherwise its present completeness would have been impossible with the limited income which is available for the maintenance of the Arboretum. The herbarium is also rich in its collection of the arborescent flora of other countries, particularly Europe and Asia, the result of purchase in some instances, but more especially of extensive exchanges representing many thousands of specimens, and of two journeys to Asia made by Professor Sargent in which he secured large numbers of herbarium specimens and seeds of many species to be grown for the living collection.

The herbarium now contains between forty-five and fifty thousand sheets of mounted specimens. The library contains about ten thousand volumes and bound pamphlets. With the exception of a few hundred volumes the library is the gift of the Director of the Arboretum. While many of the books necessarily treat of general botany, they have been selected with special reference to dendrology and arboriculture, and in these subjects this library probably is unsurpassed by any in the country. Although there are in the United States botanical libraries containing at least two or three times the number of volumes to be found in the Arnold Arboretum, probably there is none which so fully represents the literature of the special department of botany in which the work of the Arboretum is concerned.

These treasures are given a home and protection in a practically fire-proof brick building given to the Arboretum in 1892 by Mr. H. Hollis Hunnewell. Besides furnishing accommodation for the library and herbarium, this building also contains the offices or work-rooms of the Director and assistants, and a collection of North American woods arranged for public inspection, the gift of Mr. Morris K. Jesup of New York.

Within this building is kept a card catalogue of the living plants, showing their history as to whether received as seeds, plants, cuttings, grafts, etc., from whom they came, and date of sowing or planting. Other records are kept of the trees when

set out in permanent position besides sets of maps or plans showing the location of each individual specimen plant. The problem of labelling these plants involves a good deal of labor, as frequent renewals are necessary. Among the shrubs the Latin names only are given, but at some future time the most appropriate common name may be added. When the trees get large enough large sheet-metal labels painted with Latin and common names and habitat are tacked to the trunks, copper tacks being used as they do not rust.

An important work now in progress at the Arboretum is the preparation of a bibliography of books and important articles relating to trees and woody plants. This is made possible through a special fund given by Miss A. A. Bradley, the income of which is to be used for some particular purpose or work in connection with dendrology. Already over eighty thousand cards have been prepared in this bibliography, which is a labor requiring many years to bring to a condition for publication.

From the Arboretum, as an institution, there has never been issued any bulletin or scientific publication. The results of studies by the Director or others connected with the institution have either been printed in government publications or various periodicals, or they have been issued privately by the Director, the most important works of this class being the "Silva of North America" and the irregular bulletin known as "Trees and Shrubs" of which three parts have appeared. A great deal of literature, dealing with much of the life and work of the Arboretum, appeared in "Garden and Forest," a weekly publication, issued in New York, but conducted by Professor Sargent. Ten volumes of this journal were issued between 1888 and 1898. These publications have assuredly been important factors in stimulating an interest in dendrology, arboriculture and forestry throughout the country and in bringing about a deeper appreciation of what is beautiful in the landscape in which trees and shrubs usually play a dominant part.

In future years as the work of the Arboretum broadens and it is better endowed it is hoped that the institution may have its own regular medium of publication in which those connected with it may print the results of work accomplished.

The regular income from endowment available for maintenance of the Arboretum in its early years was very small; in more recent years it has usually been between $7000 and $8000 a year, supplemented by gifts from friends and the sale of occasional surplus materials. Special efforts within the past two or three years have raised the endowment to over $300,000 so that the former regular income has been nearly doubled. From this income must be paid the salaries of the Director and assistants and wages of laborers, and all expenses incurred in care and administration.

As the first specimen trees were not planted until 1886 the Arboretum is yet young, and many more years will be required for its proper development and, as its advantages and beauties become more and more evident, it is hoped that a corresponding amount of help may be forthcoming to enable it to increase its efficiency and maintain its collections in the best possible condition. Since the organization of the Arboretum two men only have been continuously associated with it and working for it, and to them the condition of its living collections and its fame are largely due. These are Professor Charles S. Sargent, the Director, who, more than any one has brought wide public recognition to the institution and Mr. Jackson T. Dawson, the propagator and superintendent. Third in length of time connected with the Arboretum is Mr. Charles E. Faxon. Although not so long associated with it he has held the position of Assistant to the Director and in charge of the herbarium and museum for over twenty years, and if less known to the general public, his silent but effective scientific work is understood and appreciated by his friends and among scientists in every civilized community where the work of the Arnold Arboretum is known.

MY EXPERIENCE AND OBSERVATIONS IN HORTICULTURE.

BY ADIN A. HIXON, SECRETARY OF THE WORCESTER COUNTY HORTICULTURAL SOCIETY. WORCESTER, MASS.

Delivered before the Society, February 13, 1904.

[As Mr. Hixon's lecture was not written an abstract only can be presented.]

I have advised the Massachusetts farmer to plant apple trees, but to my surprise one of your essayists last year recommended the same thing for the farmers of the state in general, but not for those east of Worcester. I cannot understand why this should be so. Look at the early history of apple culture in Boston.

Since the first settlement of this country, Boston has been in advance in agricultural and horticultural development and has made rapid progress in the science of pomology. In 1625 or 1626, Rev. William Blackstone had an orchard on the west slope of Beacon Hill. Governor Endicott established nurseries in Salem as early as 1628, and in 1648 sold 500 apple trees to William Trask for 250 acres of land. Governor Winthrop was very prominent in horticultural matters as early as 1630, having land on the Mystic River and a garden at the foot of School street and also another one at Governor's Island. The Colonial Legislature granted him the use of this island for a rental of two bushels of apples, one for the governor and one for the legislature.

In 1730 apples were for sale in the market from the Blackstone orchard. Hon. Paul Dudley sent to England in 1726 an account of the culture of fruit in Roxbury. He tells of trees there which were from six to ten feet and each bearing from thirty to thirty-eight bushels. He closed his letter by saying: "Our people of late years have run so much to orchards that a village of forty families near Boston made nearly three thousand barrels of cider;

another of two hundred families made nearly ten thousand barrels." Governor Hancock's grounds near the site of the present State House, Governor Hutchins's place at the North End, near Hanover and Fleet streets, Governor Bowdoin's and his son's place at Dorchester, and many other places in and around Boston were noted for their orchards. Roxbury was particularly noted for its apple culture and some farms there have produced from five hundred to one thousand barrels of Roxbury Russets. The orchards through Essex, Middlesex, and Norfolk counties testify to the adaptability of soil and climate for apple culture.

In the selection of apple trees for the development of an orchard I would, in many cases, advise going to a nursery and selecting trees regardless of names or variety, taking a thrifty tree with plenty of roots. These I would set out and the next year graft to such varieties as my market might demand. Last spring I visited an orchard about eight miles from Worcester, while looking for the San José scale. I found the orchard free from any insect or fungous troubles and showing very good care. The owner incidentally remarked, as he was showing me through the orchard, that this tree was an Astrachan, and so on, until he had mentioned six or eight names. I advised him to graft into Gravenstein, or some other sort that he could sell. "Why, Mr. Hixon," he answered, "I get a crop every year and get from $1.50 to $3 a barrel for my apples and sell them all." This man has established a reputation for Astrachans. He took me into the cellar under his barn, all nicely cemented, to show me a sweet apple of which he thought a great deal. He had about fifty bushels in a bin, and in the next bin about one hundred bushels of turnips. You could hardly tell one from the other by the taste.

I have in mind another lot of apples kept in the cellar of a horse stable where pigs were kept. Those apples were not fit to sell. Apples to keep their flavor must be kept in a fairly dry, cool and clean place, as near a freezing temperature as possible. Another man received $4.50 for 150 Astrachan apples. They did not quite fill a bushel box, so he put in ten more apples. He sold the balance of his Astrachans, 103 bushels, for $103. Another man, two years ago, disposed of his windfalls and sec-

onds in the nearby villages, keeping his best apples until March and April, when he sold them from $3.50 to $6 a barrel.

One of our large growers a year ago sold his apples in the fall, delivered in bulk to the cars, for from eighty cents to $1.25 a barrel. After some talk, I induced him to put some of his Baldwins and Sutton Beauties into cold storage. Late in March he took out two barrels and offered them to one of our fruit dealers, who offered him $2 a barrel at first. He objected to selling them for that and was given twenty-five cents more. He came to see me, not very well pleased with his venture and I told him that it was as important to sell well as to grow well. He went out and returned in about an hour, having sold all the apples he had, about forty barrels, for $3.75 a barrel.

The man or woman to succeed in the growing of fruit or in any other horticultural pursuit must have a love for the business. He must take an interest in it and be willing to work. Then he will find it profitable. A short time ago a man called on me with a letter from a New York nurseryman advising him not to plant any of the Japanese varieties of plums. The only varieties to plant, so he wrote, were the Grand Duke and Arch Duke. Our experience in the vicinity of Worcester is that the Japanese are hardier, less liable to insects and black knot, and they bear young. Some varieties, like the Abundance, may rot and they must be thinned out. Plums, especially the Japanese, are disposed to overbear.

Peaches do better on a new soil, land that has just been cut off, leaving a soil that is filled with vegetable matter. One grower with an orchard of 2500 trees bought trees in Georgia, Delaware, New Jersey, New York, Michigan, and Connecticut, in order to determine the liability of trees from the various sections to the peach yellows. He finds very little difference, after four years' comparison. An old book published in 1626, says: "There is one thing necessary to make your orchard better and more lasting, and it is so necessary that without it your orchard cannot last, and that is soiling or manuring, or in other words, putting on a lot of vegetable matter." I distribute from 1500 to 2000 scions, mostly of apples, every year. I am very particular that these shall be from trees that bear handsome fruit and good

crops. They must be from young and thrifty trees, or what I call good pedigree stock.

The development of plant growing under glass is wonderful. The sterilization of the soil for the destruction of worms; sub-irrigation; the growing of lettuce and tomatoes without water from the time of planting until after the crop is harvested; the forcing of cucumbers, and the fertilization of the blossoms by hand or by bees to insure a crop; the use of electricity; the forcing of mushrooms and of rhubarb in the dark; are all mysteries to the ignorant. In the case of rhubarb, for instance, we get a product which is a beautiful pink and very tender, at the same time brittle, much superior to that forced in any other way.

At a meeting of farmers interested in corn growing for canning, I was asked why seed corn deteriorated. Upon inquiry I found that these farmers always saved the largest and plumpest ears for seed, while I always select the ears with the deepest kernels and the most shrivelled, as that is an indication of their having the largest percentage of sugar. I have saved one variety for years and it has improved in that time by selection. I choose my best and earliest beets, turnips, parsnips, and carrots for seed planting, and if I find a tomato plant that is doing remarkably well on my land I save the tomatoes for seed.

Melon, cucumber and tomato seeds I scoop out of the fruit and put into a bowl, letting it stand until it ferments. Then I wash it and in that way save only the plump and clean seed. The saving of seed from plants that may have become acclimated I think is a decided advantage. In my trips among the farmers I find that many of them do not have gardens. A short time ago I stayed over night with a well-to-do farmer who apologized for the late breakfast with the explanation that he had to send to one of the neighbors for potatoes. Everyone who has land should have a garden, growing a variety of vegetables and small fruits, also various kinds of other fruits.

I have several acquaintances who have bought summer places with old and scraggly apple trees on them. I have advised trimming and grafting to various early varieties so that the family and visitors may have all the fruit that they desire during vacation. A good strawberry bed is a source of pleasure and profit, espe-

cially if you have children. One of my neighbors who is very fond of currants has them from the beginning of the season until into September.

Scientists estimate that nearly 50 per cent of fruit and vegetation is destroyed by insects and fungous growth. I sometimes think it is a wise provision of nature. The farmer complains about the prices he now receives and if the product were increased 100 per cent the prices would be still lower. What we want is a higher grade quality, instead of quantity. Perhaps it would be better illustrated by referring to the fecundity of plants. A plant of giant foxglove has 864 buds, or seed pods, each containing seed estimated by weight as 589,950 seeds. Calling this 500,000, and allowing that each plant was equally prolific for three years, they would produce 125,000,000,000 plants, which would be enough to cover 100 times the entire surface of the land of the globe, allowing eight plants to the square yard.

I receive many inquiries as to what a woman can do in horticulture. We have one woman, with several children, who is growing an acre of sweet peas. A school teacher who utilized a henhouse of one-half glass and one-half boards sold during the first year $10 worth of violets and the next year $70 worth. This was done without the use of heat. I know a woman in a neighboring city who did dressmaking for a living and had two girls to educate. Her husband was a man with a good education but with very little force. She was fond of flowers, although she had but a few minutes a day to work in the garden. A neighbor, noticing her industry, gave her a few old sashes which served as a beginning. In a few years she had several houses, her husband was her foreman, her girls were educated and her own health was very much improved.

A woman and two daughters in poor health, yet with a love for flowers and a small garden, brought in two vases of small roses to one of our exhibitions, receiving a gratuity of fifty cents. They were so much encouraged that they continued exhibiting, receiving during the first season $2.50, in the second $7, and during the third season $47.50 in premiums. They now have two greenhouses. I have in mind a little woman in one of the Western States who built a small house 12 by 30 feet for health and

pleasure, thirteen years ago. She now has twenty-nine houses and is a large grower of pinks and chrysanthemums. A woman who is interested and has a love for any of the horticultural divisions, beginning in a small way and not afraid of work, can succeed.

For a general fertilizer for garden and greenhouse work I would suggest: 2000 pounds of fine bone; 500 pounds of nitrate of soda; 400 pounds of muriate of potash; 300 pounds of sulphate of ammonia; which mix thoroughly. Some of our experimental stations say that the horticulturist cannot afford to use bone. In my own experience of twenty-five years I have never found a gardener that you could persuade to do without it. One of your most successful exhibitors of chrysanthemums says, "I use bone liberally in my compost heap, and when I prepare my beds in the houses I fork in another lot, and again the middle of the season." His exhibits are all first premium. On my own place we use it liberally inside and out and flowers grown with it show a decided improvement in petal and foliage.

I have great faith in lime, used with judgment. A garden that has been heavily dressed for years with stable manure that does not respond can be treated with a dressing of lime in the fall and ploughed in, then a light dressing in the spring and harrowed. An orchard that has green crops, if ploughed under sometimes will show mold, especially in the wet season; or any land that may be sour will be benefited. Greenhouse beds are benefited by an application once a year, early in the fall, also compost heaps that are full of worms.

A simple remedy, and effectual if used upon the first appearance of lice on house plants or any out-of-door plants, roses, sweet peas, nasturtiums, chrysanthemums, beans, melons, cucumbers, etc., is a strong solution of ivory soap. Two applications should be sufficient. I have had good success in treating San José scale with two pounds of whale-oil soap to one gallon of water and one pint of kerosene oil, applied to the trunk of the trees and branches with a paint brush as high up as my time and patience will allow, spraying the balance of the tree with the same solution.

ORCHIDS AND THEIR CULTURE.

BY WILLIAM N. CRAIG, NORTH EASTON, MASS.

Delivered before the Society, February 20, 1904.

The advance in American horticulture during the past fifteen years has been truly remarkable. Especially striking has been the steady progress in matters pertaining to floriculture. While the rose, carnation, violet, and chrysanthemum are still the most widely cultivated and the most popular of our greenhouse flowers, it must be admitted that orchids, the aristocrats of the floral kingdom are yearly increasing in popularity and are being cultivated to a greater or less extent in ten times the number of establishments, more especially private ones, as compared with a decade ago. The successful cultivation of these interesting and beautiful plants is justly considered a difficult branch of the gardener's art; certainly when the value of a considerable collection containing many hundreds of species is considered, their successful management is, to say the least, a responsible undertaking.

Since early boyhood we have had a passionate love for these curious and lovely plants. It is true that they are sometimes refractory and cause worry and anxiety, but they give more solid pleasure than any other class of greenhouse plants where they succeed.

Orchids are not easy of propagation when compared with other plants, nor, on the other hand, are they short lived, except in rare cases. They are, however, interesting at all seasons to the grower, while their distinctive forms and colorings and wonderful lasting properties appeal to the everyday flower fancier.

We believe the idea, once so prevalent, about orchids being difficult subjects to grow and flower, is now tolerably well exploded. Some species certainly need lots of fussing over, but the major portion of the popular varieties are of comparatively easy culture, and no one who is able to grow roses or carnations

needs be afraid to handle orchids. Many kinds will succeed well in any ordinary greenhouse and we have seen, on more than one occasion, nicely flowered specimens grown in dwelling houses. Such sorts as *Dendrobium nobile*, *Cypripedium insigne*, *Lycaste Skinneri*, and *Cœlogyne cristata* will flower satisfactorily in an ordinary bay-window if frost is excluded, and a little judgment used in watering, and other essential details.

The general impression is that orchids are very costly and only to be secured by the wealthy. While it is true that their primary cost is higher than that of most other plants, they usually give their initial cost in flowers the first season. Especially is this true of the most showy and popular of our American orchids, the cattleyas. Nice flowering-sized plants of the major portion of our popular orchids can be had at from two to five dollars apiece. Of course, white cattleyas, yellow cypripediums, some of the choicer hybrids, and other unique forms may bring from $100 to $500 each, but the number of specimens changing hands at these prices is, however, very few in America.

We believe the late Mr. F. L. Ames when he paid $1000 for a white form of *Cattleya gigas* reached the maximum figure ever paid here.

As much as $500 or even more has been paid on many occasions, but the present-day tendency is to grow popular varieties of moderate cost, and allow European fanciers to hold the very valuable species; there are, of course, a few exceptions to this rule.

In Europe, especially in Great Britain, and in Belgium, France, and Germany there are an extraordinary number of private and commercial collections, and all choice novelties readily command remarkable prices. As much as one thousand guineas was recently paid for a small plant of *Odontoglossum crispum Pittianum* in England, and prices almost as high have been given for other choice forms of the same orchid.

When Baron Schroeder, in the early 80s paid $1825 for a tiny plant of *Cypripedium Stonei platyterium*, and another fancier gave $1700 for *Ærides Lawrenceanum*, it was believed that high-water mark in orchid prices had been reached; but as much as $500 has been paid for the pollen from a single odontoglossum

flower in the past year! Diamonds are cheap when compared with such prices.

We are now yearly getting less and less new species from the forests and more and more from the hybridist, and in the years to come we will be more dependent on the seedling raiser than on the forest collector. Orchids were successfully raised from seed in England and Ireland as far back as 1849, although it was not until 1860 that the Messrs. Veitch electrified the floral world by exhibiting the first seedling orchid before the Royal Horticultural Society of England. Today seedling raising is a hobby with many private growers and a big industry with some commercial ones. In some respects the seedling raising is being overdone; particularly is this true of the cypripediums, which are now so crossed and intercrossed that no living authority could name them correctly. As far back as 1870 some 2500 species of orchids were listed by Anderson in his "Practical Gardener," including all garden hybrids; there are probably nearly treble that number today.

Twenty-five years ago East Indian orchids were all the rage; now they are little seen. In America today, cattleyas are our most popular kind; in Europe odontoglossums are far in the lead. Our climate suits the one while the European coolness is to the liking of the other. It is unfortunate that our hot summers make odontoglossum culture difficult here, for they are the most chaste and beautiful of all orchids; but we have the satisfaction, on the other hand, thanks to our clear skies, of growing better cattleyas than can be produced in Europe. As showing the positions held by the leading genera in Europe, we may say that in 1903 the Royal Horticultural Society of England gave 33 first-class certificates (the highest award) and 73 awards of merit. Odontoglossums secured 34 of these awards, cattleyas 15, cypripediums 16, (only one being of the first class), lælio-cattleyas 14, dendrobiums 9, and all other orchids 18. Out of this number no less than 73 were garden hybrids, 8 natural hybrids from the forest, and only 25 natural forest species.

Seedling raising in America is making good progress; cattleyas, lælio-cattleyas, sophro-cattleyas, cypripediums, cymbidiums, zygopetalums, and other genera all having been successfully intercrossed. Some specially fine cattleyas have been raised in late years.

What we need here, more especially at the present time, is some seedling raiser who will grow large batches of such standard cattleyas as *Mossiæ*, *Trianæ*, *Mendelii*, and *labiata*, which are superior to all seedlings so far raised by intercrossing.

Such plants when of flowering size would readily bring much higher prices than dried forest specimens. Seedling raising, during the past season, has been successfully carried on in the open air in Oviedo, Florida, where an enthusiastic amateur has germinated numbers of cattleyas, lælio-cattleyas, and dendrobiums on the mossy trunks of magnolia trees protected by cheese-cloth. Temperatures of 28°–30° were frequently recorded where these seedlings were raised. They prove a most interesting experiment and open up great future possibilities.

Seedling raising under glass is attended with many obstacles and difficulties. Good fern fibre of a soft, spongy nature is suitable to sow the seeds on. They will also germinate if sown on the surface of the soil of growing orchid plants, or on calico cloth kept damp. Very great care in watering, ventilation and other details is necessary, and if all these prove successful flowering-size plants may be had in from two to ten years according to the genera worked upon. The present tendency of endeavoring to secure choice novelties is to be commended, but it will give us a bewildering lot of hybrids to remember. A restriction of the crossing to a few approved kinds, or to the securing of large lots of staple kinds is what we need in America.

In the matter of compost nothing is better for the general run of orchids than good osmunda fern fibre; sphagnum moss we are using less each year. Plants with growing moss on the surface of the pots in baskets look nice, but what swarms of snails are brought and what havoc they raise with flower spikes and tender roots!

Much has been written during the past few years on the culture of orchids in leaf mould in preference to fern root. We tried it quite extensively and liked it for a time, but it eventually proved a failure and we have abandoned it for good. Odontoglossums, miltonias, cattleyas, and dendrobiums all deteriorated in it under the most careful treatment, and we do not believe it will ever be of any service in America. Even in Europe opinions on its mer-

its are divided; some good growers will not use it, and it seems to be most successful when mixed with other ingredients.

Cattleyas are easily the most popular of orchids in America and, with the exception of *chrysotoxa*, which likes a higher temperature all the varieties named do well in a night temperature of 55°–60° in winter, or even a few degrees lower. They like abundance of ventilation on all possible occasions and succeed well in baskets, pans, or pots, either suspended from the roof or on staging within three feet of the glass.

To secure a supply during the whole year the following species should be grown: *C. Percivaliana, Trianæ, Schroederæ, Mossiæ, Mendelii, Skinneri, Warneri, gigas, chrysotoxa, Gaskelliana, Bowringiana,* and *labiata.* Closely allied to the cattleyas are the lælias; of these the most useful are *L. purpurata, elegans,* (each of these succeeds well with the cattleyas), *anceps* (some of the best forms are *Percivaliana, Stella, Schroederæ, Amesiana, Oweniana,* and *Hillii*), and *Jongheana,* the last named succeeding best in a night temperature of 50°–52° in winter. Other useful lælias requiring cooler treatment are *L. acuminata, harpophylla, flava,* and *Perrinii.* There are now numerous laeliocattleyas; they are as a rule, however, too high priced to be of general use.

Cypripediums are very useful orchids on private estates; their popularity is somewhat on the wane, but their wonderful lasting properties and diversity of forms will always make them necessary where any number of orchids are grown. For general purposes no varieties surpass *C. insigne* and its forms, and *Leeanum.* Other useful sorts are *C. villosum, Harrisianum, superbiens, œnanthum,* and *Sallierii aureum.* The dull-colored species are not serviceable for decorative purposes.

Dendrobiums are among the most lovely of all orchids. They like plenty of heat and moisture during the growing season, a thorough ripening of the bulbs in a light, sunny house, and the withholding of water until the flower nodes are well advanced. *D. nobile* is still the best species; some of its best forms are *Sanderiana, virginale, Ballianum, pulchellum, nobilius,* and *Backhouseana. D. Wardianum* is also a magnificent species. Other desirable sorts are *splendidissimum grandiflorum, Ainsworthii,*

Phalænopsis Schroederianum, *Formosum giganteum* and *fimbriatum*. Many of the scarce hybrids, such as *Juno*, *Wiganiæ*, *Euryalus*, *Cybele*, *Venus*, and *Schneiderianum* are very fine.

Cœlogynes, especially *C. cristata*, are beautiful and easily grown orchids for decorative purposes. The *Chatsworth* variety, *Lemoniana*, and *alba* are all worth growing if a collection is desired. Such varieties as *pandurata*, *Massangeana*, *tomentosa*, and *barbata* are worth growing. Calanthes, especially *C. Veitchii* with its long spikes of rosy-pink flowers, are indispensable winter-blooming orchids. They need a brisk, moist heat during the growing season, and should not be placed in a lower temperature than 55°, even when in bloom. Pot culture in fibrous loam and dried cow manure and applications of liquid manure during the growing season are necessary.

Oncidiums are less cultivated than a generation ago; the two most popular species, *varicosum Rogersii* and *ornithorhynchum* grow well in baskets, in pans hung well up to the light in an intermediate temperature.

Sphagnum moss should not be used as snails are especially fond of the flower spikes. Other useful oncidiums are *O. tigrinum*, *Marshallianum*, *incurvum*, and *crispum*.

Phalænopses need a warm, moist place, coming as they do from some of the hottest parts of the world; basket culture is best and too heavy shade is not desirable or the plants will not flower well, although they will make beautiful foliage. Excellent varieties are *P. Schilleriana*, *amabilis*, *Stuartiana*, *Sanderiana*, and *Vesta*.

Other East Indian orchids, including *Vanda*, *Aerides*, and *Saccolabium*, while containing many beautiful and graceful species, are not at present as popular as they were twenty-five years ago. *Vanda cærulea* succeeds well at the cold end of the cattleya house. Miltonias are very beautiful orchids especially the summer blooming *M. vexillaria*. A night temperature of 55° in winter with sun and dryness at root until root action commences, with frequent sponging and fumigation for thrips are essential to success. *M. Roezlii* and *M. phalænopsis* are other desirable species.

Odontoglossums are the most beautiful of all orchids and the most difficult to grow in our Eastern states. A marked improve-

ment has come over these the past two years, thanks, in the main, to the cool summers and to more sensible winter treatment.

A north house with roller blinds to shade from the sun from April to October, and free exposure to the sun the rest of the year to allow the bulbs and leaves to take on a reddish-brown hue is the culture we give them now. *O. crispum* is the finest of all odontoglossums. Other excellent sorts are *O. Pescatorei*, *Andersonianum*, *Hallii*, *luteo-purpureum*, *pulchellum majus*, *citrosmum*, *gloriosum*, and *triumphans*.

Masdevallias need similar treatment to odontoglossums; the most attractive species are *M. ignea*, *Harryana*, *Tovarensis*, *Veitchiana*, and *Lindeni*.

A few other useful orchids to grow are *Phaius grandifolius*, *Sophronitis grandiflora*, *Platyclinis glumacea*, *Cymbidium* in variety, *Zygopetalum MacKayi*, and *Epidendrum vitellinum majus*.

We do not believe that private estates in America, except in special cases, will form extensive orchid collections as in Great Britain. The tendency will be, rather, to grow batches of a limited number of species adapted for cut-flower purposes or for other decorative effects. Their culture from a commercial standpoint will not progress as will that of private establishments, but their popularity will increase in the years to come, and within ten years the number of growers of these beautiful flowers will be quadrupled. They will never be the flower of the masses like the rose, carnation, and violet, but will always be curious, interesting, beautiful, and bewitching to the ever increasing army of flower lovers.

THE STUDY OF PARASITIC FUNGI IN THE UNITED STATES.

BY G. P. CLINTON, S. D., NEW HAVEN, CONN.

ANNUAL LECTURE UNDER THE JOHN LEWIS RUSSELL BEQUEST.

Read before the Society, February 27, 1904, with Stereopticon Illustrations.

It is now twelve years since the late Dr. James Ellis Humphrey, of the Massachusetts Agricultural Experiment Station, delivered the initial address before this society on "Plant Diseases and their Remedies." Dr. Humphrey presented his paper at a time when the study of fungi, in their economic aspect, was just fairly started in this country. Knowledge by the public was, of necessity, limited and so he wisely gave a paper dealing with the general nature of these plants. Since then the matter has been presented annually to the Society by different speakers, each dealing with it from a somewhat different point of view. The science is still young and, while the general knowledge by the public and the specific information of the investigator have both greatly increased, it still remains, I fear, a subject lacking in magnetic or sensational features with which to greatly enthuse an audience. I have thought that it might add still another point of view, if in my discussion today, I treated it somewhat from the historical side, dealing especially with its early history in this country and with the conditions that we find at present. At the same time, by aid of the lantern, I shall briefly indicate some of the troubles that have recently attracted attention, either because of their importance or because of new light gained of their life history. The specimens that are on exhibition, too, may give you some further idea of the great variety of these troubles of our cultivated plants.

The study of fungi in this country began less than one hundred years ago. Of course this is not strange since at that time the country was comparatively undeveloped and the government in its infancy. Turning to Europe, however, we find about the

same condition of affairs. Previous to the nineteenth century knowledge of fungi was confined almost entirely to the conspicuous forms, such as the toadstools. With the perfection of the microscope during the first quarter of the century there were thrown open for minute examination those numerous parasitic and saprophytic forms that previously had been seen only in their gross aspect or had not been seen at all. While the microscopic study was taken up in this country scarcely later than in Europe yet, because of our infancy, these preliminary investigations were very limited, practically the work of a single investigator.

In considering the history of the subject in the United States it seems to the writer that there have been three periods in its development. These, while not sharply marked off from each other, possess enough peculiarity to distinguish them in a general way. They may be briefly characterized as the periods of collection, of instruction, and of investigation.

The first period was characterized by the collector who merely listed the specimens he found or gave vague descriptions to those that proved to be new. In point of time this extended from 1812 to 1870, or from the return of Schweinitz to this country to the establishment at Harvard University of a department of Cryptogamic Botany. Louis von Schweinitz was a native Bavarian minister, who, after receiving his higher education in Germany, returned to this country in the interests of his particular sect. While I have little doubt that he was a useful servant in his accepted calling, I have no doubt whatever that he was an unusually good and active botanist. In Europe he had studied under the botanist, Albertini, and together they had published in 1805 a pioneer work on fungi. His ministerial labors in this country first took him to Salem, North Carolina. In 1818 he published the first important paper on American fungi. This was a list of the species, with a description of those new to science, that he had observed and collected in Carolina. Later his work took him to his native town of Bethlehem, Pennsylvania, where he continued his botanical studies on the flora of that region. In 1834 he published his most important treatise on "North American Fungi" which lists about three thousand species he had observed in the Carolinas and Pennsylvania. Schweinitz pub-

lished several important botanical papers dealing with other subjects, but these three were the most important treating of the fungi. When one takes into consideration the large amount of work that he had to perform as minister and teacher, one is surprised that he accomplished so much work in a botanical way. Fortunately Schweinitz's herbarium of fungi is still in existence, being in the hands of the Philadelphia Academy of Sciences.

The immediate successor to Schweinitz in time and importance was a Massachusetts man, also a minister, Moses Ashley Curtis, who was born at Stockbridge and educated at Williams. In 1830 he first went South as a tutor, to Wilmington, North Carolina. Like Schweinitz, he was a great lover of nature as well as of Nature's God, and so he soon began his study of the very interesting flora of this state and this was extended as his later ministerial labors took him to different places in it, and in South Carolina. Curtis was what your enthusiastic friends of the Boston Mycological Society might term "somewhat of a mycophagist." At least he gave us a long list of the edible mushrooms of that region and during the Civil War earnestly advocated their use by his friends as a substitute for meat. He was a correspondent of the Rev. M. J. Berkeley of England, at that time one of the most eminent mycologists. Many of his specimens were sent to the latter who published the lists and descriptions in his "Notices of North American Fungi" in Grevillia. The new species usually bear the authority "B. & C.," standing for Berkeley and Curtis. Curtis also published a number of articles on fungi in American periodicals but he did not confine his attention to fungi, for one of his most important works included the phaenogamic flora of his region. It might be of interest to note here that his valuable collection of fungi is now the property of the Cryptogamic Herbarium of Harvard.

Later workers in this early period were Frost of Vermont, interested chiefly in the fleshy fungi, Wright of Connecticut, Russell of Massachusetts, Lea of Ohio, and Ravenel of South Carolina. The latter's work is of special interest because he was the first to publish exsiccati of American fungi, issuing one set on the fungi of Carolina and a larger one on the fungi of North America.

From these preliminary statements you will readily observe that these early investigators were of a different type from the plant pathologists of today. In the first place they gained their living through other vocations. In the second, as botanists, they were usually almost equally interested in the flowering plants; in other words, they were more of the type of naturalists than of specialists. Finally, what they knew of fungi they had gained largely at first hand, through contact with nature, and not at any institution of learning. Their work was a work of love and of pleasure, unmixed with duty and necessity. Naturally the large and showy forms, such as the fleshy fungi, received most attention, while the economic species attracted less. At that time, however, there was not great need for the study of the parasites of the garden, field, or orchard. To them we are indebted for specimens, for lists showing distribution, and for meagre descriptions of new forms, but not for detailed studies in any direction, for they were pioneers.

Coming to the second period we find the type that characterizes it is that of the teacher. The professor and the pupil now come into prominence. Previous to 1870 the botany taught in our institutions of learning was the botany of flowering plants. Asa Gray recognizing the importance of the subject made provision at this time for instruction in the lower cryptogams at Harvard. Upon whom fell this task you are all well aware. Yet the professor before he could teach had to be taught! Concerning this Professor Farlow very modestly remarks, "It certainly now seems ridiculous that one who had only just finished his medical studies and knew nothing about cryptogams beyond what he had read in leisure moments or had picked up in the field should attempt to teach the subject. But the young are courageous, not to say audacious, if they are not learned, and, it must also be admitted, the demands of the students for information on the subject were easily satisfied at that time. After two years' experience as Professor Gray's assistant, the writer, finding it impossible to get even a passable knowledge of the subject in America, went to Europe and spent two years in study in Germany and France and on his return was appointed assistant Professor of Botany in Harvard University and stationed at the Bussey Institution, the Agricultural School of the University."

Harvard, however, was not alone in its provision for instruction in the cryptogams. About this time our state universities were coming into existence and their influence, as well, was felt in the shaping of new courses of study and the equipping of laboratories. Among the earliest to take up this work was the University of Illinois under the direction of Professor Burrill, still its head professor of botany. Professor Burrill was unable to go to Europe for his instruction but he had to send to England for books on the subject, and his first microscopes were practically homemade. The trials and difficulties of these early teachers, however, were easily offset by their enthusiasm. This educational movement has been one of slow but ever of sure and upward growth. Today we find not one or two but practically all of our colleges giving at least some instruction on fungi, and in many institutions there are special courses in plant pathology. This has opened numerous positions in various institutions in which a man may gain a livelihood by his specialty. While these positions often demand instruction or knowledge in various botanical subjects, they are as often filled by the man who has specialized with fungi as by one who has made any other subject his principal line of research. No longer is it necessary for the professor or the student to go abroad for study, though this is still done to some extent. We have several large herbaria, numerous well-equipped laboratories, excellent teachers and specialists, for the advanced student, in almost all phases of the subject. One even gets a taste of it in the high school.

Our botanists no sooner became instructors than they started in to be investigators as well. These investigations for the first time took on an economic character. Professor Farlow had scarcely become established at Bussey before he issued a paper on the potato rot. That was about thirty years ago and strange as it may seem botanists are still working on the same subject. This paper was followed by others by the same author on mildew of grape, black knot, etc. Burrill of Illinois began his studies on the fungous troubles of the Mississippi Valley and threw new light on the nature of blight in pear and apple. His discovery and proof of this as a bacterial trouble placed these organisms, for the first time, as agents of disease in plants. Later, Arthur, in New

York, and others took up the study of fungi and bacteria in their economic relations. Even the government botanists, who up to this time had been strict systematists of the phaenogamic type, began to treat somewhat of these lower forms.

The teacher has not wholly usurped this period for we still find examples of the older naturalists in the more modern systematists. Sometimes these have been persons gaining a livelihood in other directions, or sometimes occupying positions as curators of collections. These men have added to our knowledge of species and distribution and in some cases have given us systematic treatment of groups. The most prominent of these are Peck, the State Botanist of New York, and Ellis, the veteran mycologist of New Jersey. In a way both of these men have been educators though they have never served as instructors. Most of our new species have been described by them, and Ellis through his excellent sets of North American Fungi and Fungi Columbiani, embracing several thousand specimens, has aided many of us in our studies of fungi. In the earlier work of these men, M. A. Cooke, the successor of Berkeley in England, was of help.

As was stated earlier, however, this period was not characterized by the investigator but by the teacher. The professor found most of his time taken with his class room or in his preparation for it. He was not hired to investigate but to teach. He was not prohibited from investigating during his spare moments and vacations, neither was he especially encouraged to do so by the provision of adequate equipment.

It was in our third period of development that this investigating spirit came especially to the front. This last period extends from the founding of our Experiment Stations in 1887 to the present day. The Experiment Stations in most cases provide for a botanist on their staff, and usually his work as an investigator led him to deal more largely with fungi than with flowering plants. The Experiment Stations, too, provide facilities for research that were not enjoyed before. We now see a somewhat different situation from that of the preceding period, for here we have a demand for the investigator, and facilities offered him. True the botanist also often serves now as a teacher as well

as an investigator, but even then his duties as an instructor do not demand the time they did formerly.

The work of the stations has served to strengthen and multiply the research work of our colleges and universities. At the time these stations were established the government also began to extend its botanical work, especially in the line of vegetable pathology. As would naturally be expected, when investigators were first in demand but comparatively few could pass muster as first class, chiefly because of inexperience. Today the situation ought to be somewhat improved in this respect. The laboratories have been equipped, the libraries have been supplied with literature bearing on the subject, and the herbaria stocked with specimens. Men have been trained through their actual experiences and the universities are now adequately training others to take their places as needed. Lines of work have been laid out and general problems have been solved. Where then do we stand today and what is the outlook?

I think we can safely state that the most characteristic thing of today is the tendency to specialize. We can still occasionally find the old type of naturalist as an investigator, tucked away in some academy of science or local college, but he is a rare individual. The man who hopes to do something of permanent value must select a limited field in which to work and then bend his energies to study it minutely. He may be a general botanist or even naturalist, but he does not want to investigate in general botany or natural history. To succeed he ought to be a broad man working narrowly and deeply.

We have arrived at the point where we may also ask, With what have these specialists been working and how? There are other ways than the systematic way of studying fungi, though this is the oldest and to many of us the most enticing. So we are still collecting, labeling and placing specimens in our herbaria, and the results of our determinations are published as lists showing distribution. Botanists are still describing new species of fungi and it looks as if they would continue to do so for some time before the field is exhausted; even then they will go on, apparently, describing old ones as new. Not a few mycologists are studying the relationships of groups and publishing

the results of their studies in monographic form. In years past we have had papers by Burrill on the Uredineae and Erysipheae, Humphrey on the Saprolegniaceae, Peck on the Boleti, Setchell on Doassansia, Morgan on the Gasteromycetes. Later Ellis gave us a volume on the Pyrenomycetes and a paper on Phyllosticta; Harkness a memoir on the Fungi Hypogei, and Macbride a book on the Myxomycetes; Thaxter has been giving us for some time the results of his studies on the Laboulbenias, and American botanists have reason to feel proud of his work with these obscure fungi of insects. Atkinson, Earle, and Peck are dealing with the Agaricini, and McIlvane and others have given us popular books on this group. Griffiths has monographed the Sordariaceae. Salmon, of England, has extended, in his general monograph of the Erysipheae, the earlier work of Burrill. Olive has published papers on the Acrasieae. Holway and Arthur are publishing papers on the Uredineae, Burt is studying the lower Hymenomycetes, and Lloyd is at work on the Gasteromycetes. The writer hopes to add his mite with the Ustilagineae. Others are publishing papers dealing with miscellaneous groups. The whole field seems to be fairly well covered, especially as advanced students at Harvard and Columbia are constantly taking up small groups for critical investigation. Mention should be made here of state survey work being done by Bessey and Clements in Nebraska, MacMillan in Minnesota, Davis in Wisconsin, Kellerman in Ohio, Peck in New York, Jones in Vermont; and of previous work done by Harkness in California, Earle and Underwood and Atkinson in Alabama, Earle and Tracy in Mississippi, Riker in Maine, and Ellis in New Jersey. Surely Schweinitz would not be lonely if working in these days.

The morphological study of fungi is closely associated on the one hand with a systematic treatment and on the other with life history studies. We usually expect morphological studies from those who are working with a single species or with small groups and we expect such work to be illustrated with drawings more fully than when treated from any other point of view save the cytological. The writings of Thaxter, Setchell, Burt, Smith, and Atkinson have sometimes been of this nature.

The ideal method of studying single species of fungi is that

which emphasizes life history. The earlier work of Thaxter with the Gymnosporangia and potato scab, and Smith's paper on the wilt of cotton and his various papers on bacterial diseases of plants are models for those aiming to study from this point of view. Arthur and later Kellerman in their efforts to solve the relationships of the aecidial and teleutal stages of our rusts are working somewhat in this same field. Life-history study emphasizes the making of artificial cultures, if possible, to study the fungus in its various phases of development and to discover unknown stages. It also emphasizes the study of the fungus in nature to learn of its time and manner of appearance, its relation to environment, and its injury to the host if parasitic. With parasitic forms it involves infection experiments to determine how the fungus gains entrance to its host and their subsequent relationships. Experiment Station workers are more apt to work along this line than are others. It seems to the writer, however, that it is also the type of study best adapted for advanced students in our post-graduate schools. Professors there are too much inclined to suggest to the student a monographic treatment of some group. Perhaps the group may be small, yet a monographic treatment of any group of plants should be the result of the later years of one's work, since it involves a mature judgment and a general knowledge of all groups.

One of the most modern ways of studying fungi is through the eyes of the cytologist. Here are emphasized cell structure and its division, also the minutiae of fecundation. Those thus studying hope to solve general relationships and questions of evolution. Here, more strongly than in other lines, we feel the influence of Europe and especially of Germany. Most eminent in this domain stands Harper of Wisconsin, with Stevens, Davis, Swingle, Olive, and King contributing occasional papers.

Later, perhaps, botanists will be paying special attention to fungi from the ecological side of the question. The relation of fungi to season, especially as regards moisture, becomes evident even to a novice. This relationship has been emphasized most, so far, in the writings of Halsted. The physo-chemical side has been approached by Dean in his studies of the ferments secreted by certain moulds, and by Duggar and others in germination studies of spores in chemical solutions.

I have no doubt the line of study most interesting to you as horticulturists is that of the plant pathologist, especially of the one studying preventive treatments. I have not emphasized this phase of the subject before, partially because it has been the side repeatedly presented to you, and partially because the more I learn the more I realize that the terms parasite and saprophyte contrast more strongly in print than do the real things in nature; and so I am led to believe that any botanist gives aid to the science, even in its economic bearings, not so much from the point of view from which he works but by the thoroughness with which he works.

There have been four general lines followed in the treatment or prevention of fungous diseases. These are spraying, seed treatment, soil treatment, and plant breeding. A fifth possibly might be added which would include such general precautions as the selection of good seed or stock, proper pruning or picking to rid the plant of diseased members, rotation of crops to avoid accumulation of disease, and destruction of refuse to limit the breeding of saprophytic stages or the wintering of spore forms.

On the whole, spraying has proved to be the most general and efficient treatment. For the initiative in this work we are chiefly indebted to the Division of Vegetable Pathology of the United States Department of Agriculture. The early work of Scribner and the later and more extended work of Galloway and his assistants were incentives for subsequent experimentation in various Experiment Stations. First the grape rots and apple scab were dealt with and eventually effective treatments evolved. Since then spraying experiments have been tried for almost all of the important troubles and remedies found for not a few. Jones of Vermont with potato blight, Pierce and others with leaf curl of peach, and Halsted of New Jersey, Chester of Delaware, Selby of Ohio, and Stewart of New York, working with a great variety of troubles, have been prominent experimenters. Our horticultural friends have not been idle and we must not forget to mention the names of Goff, Taft, Green, and Beach among these. Out of all this experimentation a few general principles may be gathered. These briefly indicated are as follows: Bordeaux mixture has proved its supremacy as a fungicide; the value of

spraying resides in its being preventive rather than curative; success of prevention lies in starting before the appearance of disease, by repetition as needed during the period of infection, and in the thoroughness of the work; a final factor determining greater or less success, and one that cannot be controlled, is season. Spraying, apparently, has come to stay since it has become a common practice in the larger orchards, vineyards, and even in potato fields. Work for the experimenter along this line, however, offers little that is likely to prove startling in the way of new discoveries. Little is to be expected in new or better fungicides or in the methods of application. There is still room, however, for extending our knowledge of the best ways of treating many diseases.

The second method of prevention I mentioned was seed treatment. We got our hint of spraying from France; that of seed treatment came from Denmark. Kellerman and Swingle, while at the Kansas Experiment Station, were about the first to take up seed treatment. Their extensive and successful work with hot water and potassium sulphid for the prevention of our cereal smuts, especially that of oats, needs mention here. Later came Bolley's work, especially with potato scab and stinking smut of wheat, and to him we are chiefly indebted for corrosive sublimate and formalin as fungicides, and for the development of the sprinkling method in the treatment of smuts. Many other investigators have had a lesser share in extending our knowledge and in introducing the practice. Seed treatment proves of value only in those cases, chiefly with the smuts, in which the germs that secure infection are carried on the seed. To a lesser extent, perhaps, many troubles are started partially by spores adhering to the seed. Seed treatment, also, usually hastens germination. Perhaps the day will come when we shall generally select and treat our seed, fumigate our stock, and destroy our rubbish, but it is certainly not here now.

In the treatment of soil for prevention of disease perhaps Halsted of New Jersey has done more work than others. Soil treatment if it could be made practical and efficient would probably lessen many of our serious fungous troubles. But the difficulty lies in making it either efficient or practical. The earlier

work of Thaxter with onion smut has been more recently extended by Stewart of New York and Selby of Ohio, and yet, while considerable good land is lost to onion culture because infested with smut, the growers apparently do not go in for soil treatment very extensively. Halsted and others have shown the value of lime on land infested with club root of cabbage. Stone and Smith of this state have experimented with steam for sterilizing soil of greenhouses against stem-rot troubles. A Frenchman seems to be the latest in the field with experimental work with copper sulphate against rot of potato by the blight fungus, but this idea, apparently, has not yet been imported.

The fourth method employed to fight the ubiquitous fungus is plant selection or breeding. Nature, apparently, has often found this a successful way of warding off attacks; at least we find that there is a great difference in the susceptibility to attack in different varieties. Any greenhouse man knows that all varieties of carnations and chrysanthemums do not rust with the same readiness, though he no doubt often wishes this difference was more marked than it really is. Sometimes we can take advantage of these differences by selection of resistant varieties, but very often the most desirable varieties are those that become the worst infested. So far the selecting or breeding up fungus-resisting varieties has been chiefly the work of our government botanists. There are a number of difficulties to be encountered in a problem of this kind. In the first place it is evidently applicable only for troubles that are persistently injurious. Then it also means work that in most cases must run over a series of years before reliable results can be obtained. Where crossing is employed to breed up new varieties there is the danger of losing desirable qualities or of introducing those that are undesirable. Finally, failure is as likely to be the reward for one's efforts as success. Orton of the Department of Agriculture apparently accomplished desired results in obtaining a variety of cotton resistant to wilt, and Carlton has been at work for some time on the problem of finding desirable varieties of wheat that are rust proof. Stevens of South Carolina has lately taken up the task of finding a variety of tobacco that is resistant to a troublesome bacterial wilt.

During the past four or five years pathologists have had under

consideration a great variety of diseases of plants, and considerable progress has been made in clearing up life histories. Let us briefly consider the more prominent of these, taking them up under the great groups of classification.

Slime molds. Previous to the work of Toumey the club root of cabbage and allied plants was the only trouble we could trace to the slime molds. Toumey, while botanist at the Arizona Station, made an exhaustive study of the crown gall which is common on fruit trees, and as a result of his investigations discovered a new species of slime mold which he holds as the active agent of this trouble. It would be very desirable to have this study verified by other investigators and the question settled whether those similar troubles of the grape, raspberry, and apple are due to same or different organisms.

The Bacteria. We owe most of our recent knowledge of bacterial diseases of plants to the exact work of Erwin F. Smith of the Department of Agriculture. During recent years he has published investigations with a number of diseases, including blight of tomatoes, wilt of cucurbits, black rot of cabbage. Waite, also of the Department, has extended our knowledge of pear blight and preventive treatment for the same. Pammel of Iowa has made studies on one or two troubles. Stewart of New York has described bacterial diseases of corn and onion, and Jones of Vermont one of carrots and later a trouble similar to pear blight on the plum. Very recently Woods of the Department of Agriculture has had under investigation a bacterial disease of the carnation, and Stevens of South Carolina is at work with a bacterial wilt of tobacco.

Thread fungi or Phycomycetes. The downy mildews are about the only members of this class that have attracted attention as parasites in this country. We have no new troubles caused by these, but during the past two or three years two old ones have been unusually prevalent. Potato blight is receiving attention through prevention experiments at several of the stations in the northeastern United States. Last year you listened to a paper by Professor Jones of Vermont who has been most prominent in preventing this trouble by spraying experiments carried on for over ten years. The relation of the rot of the

tubers to the blight of the vines is a question not yet fully solved. In the experience of the writer these tuber rots are due chiefly to other organisms. The blight or downy mildew of the melon and cucumber is the second serious trouble and in some places it has practically stopped the raising of muskmelons. Spraying seems to have given favorable results with the cucumbers but scarcely so with the muskmelon. Thorough search, by the writer and others, has failed to bring to light the oospores, or winter spores, and so it is still a mystery how this fungus passes the winter in the north.

Smuts or Ustilagineae. The earlier work with the smuts has left little to be discovered by later investigators in the matter of preventive measures. Somewhat recently Arthur and Stuart and others have worked out in detail the life history of corn smut and have shown that it is exceptional in that it does not yield to seed treatment. The grain smut of sorghum has been prevented by the writer through seed treatment, and Stuart of Indiana has also similarly prevented the smut of millet. Recent work has brought forth formalin as one of the most convenient and efficient fungicides for this work. Recently sulphur and lime have been tried again by Stewart of New York and Selby of Ohio for soil treatment for onion smut. Anderson of South Carolina also has done some work with a new smut of rice imported from Japan.

Rusts or Uredineae. The recent economic work on the rusts has been confined chiefly to Carleton's studies of the cereal rusts. Halsted was the first to note the appearance of the asparagus rust in this country and he has worked considerably with this. Sirrine of New York, however, was the first to report beneficial results from spraying. He carried on extensive experiments with Resin-Bordeaux and designed a special spraying apparatus for use in large fields. From Arthur of Indiana we had a short bulletin on the chrysanthemum rust.

Sac fungi or Ascomycetes. Apple scab has recently been studied both in Europe and in this country and we now know, rather completely, its life history. The asco-spore stage was found to develop as a saprophyte on the fallen leaves. Bitter rot of apples, which has proved such a serious pest in the Mississippi

valley, has also been studied by a number of botanists. Artificial cultures made by the writer brought to light the asco-spore stage, and the investigations of Burrill, von Schrenk and Spaulding brought out other features in its life history. It was found that cankers were produced on the branches of the tree and through these the fungus was carried over the winter and produced infection of the fruit the next summer. Norton of Maryland has recently announced the discovery, on the buried mummies of peaches, of a *Sclerotinia* which proves to be the asco-spore stage of the common brown rot. Stone and Smith of Amherst some time ago found a similar stage for the common drop of greenhouse lettuce.

Fungi imperfecti are fungi having only summer spore stages so far as is actually known but which we have reason to suspect, in many cases, are connected with perfect forms. Those mentioned here will probably land eventually under the sac fungi. Stewart of New York has lately studied a *Coniothyrium* cane wilt of raspberries, which by girdling the stems with dead areas produces a wilt of the parts above. Bolley of North Dakota is studying a *Fusarium* wilt of the flax plant and has found seed treatment a preventive when planted on soil free from the fungus. Smith and Swingle of the Department of Agriculture have just issued an important paper treating of the *Fusarium* rot of potato. The writer holds this fungus and a bacterial soft rot to be the chief agents of the decay of the tubers, instead of the *Phytophthora*, or blight fungus. These *Fusarium* troubles are now known for a number of cultivated plants and future work must show whether they are all really distinct as botanists are inclined to believe. Pink rot was a very serious trouble last year in New York, coming on stored apples through the scabby spots. It was a subject investigated by both of the Experiment Stations of that state. Hedgcock of Mississippi Valley Laboratory of the Department of Agriculture, by cultural and infection experiments, has recently shown the identity of the *Phyllosticta* and the *Phoma* fungus occurring on the leaves and on the roots of the sugar beet. A *Botrytis* stem rot of the white globe onions has been extremely serious in Connecticut during the past two years and is under consideration by the writer. Sooty blotch

of the apple, so far studied only in a preliminary way by Sturgis, is a very common trouble of apples in New England and needs further attention. Black rot of apples has been studied by Paddock of New York and its occurrence on the twigs is known to be parasitic rather than saprophytic, as formerly supposed.

Fleshy fungi or Hymenomycetes. Ordinarily we do not count the fleshy fungi among our prominent fungous foes. Recent studies have added a few to this class. Duggar and Stewart of New York made a study of the sterile *Rhizoctonia* fungus that causes stem rot in a number of plants. Among those attacked is the potato. Later studies by Rolfs and Selby have shown this to be a serious trouble in New York, Colorado, and Ohio. Rolfs succeeded in holding it in check by seed treatment when planted on uninfested land. Through artificial cultures he also finally secured a spore stage that places this fungus under the genus *Corticium* of the lower Hymenomycetes. Wilcox, while at Oklahoma, made a study of the foot rot so troublesome in certain orchards in the middle west. He finds the cause in a new species of *Clytocybe.* Von Schrenk of the Agricultural Department has recently given us a couple of papers on the timber decays caused by certain species of the *Polyporei.* Popular accounts of the edible and poisonous fungi have been published from time to time by Farlow, Atkinson, Coville, Longyear, and others.

I have thus briefly outlined the work that has been done and is being done by mycologists in this country. As to the outlook for the future, I care not to predict. It seems, however, that we have no need to complain of lack of teachers or investigators. Facilities for investigation and especially for the publication of results are fairly adequate. We are turning out enough literature to satisfy even the most rabid. Apparently what we need most of all is more method in our work and higher standards in its execution.

Discussion.

Hon. Aaron Low inquired what could be done to prevent the havoc caused by these fungous attacks.

Dr. Clinton replied that of all the remedies ever tried Bor-

deaux mixture stands ahead, but it is important to start early with it. For the potato blight and the melon wilt begin spraying the first part of July.

Samuel H. Warren remarked that in the case of black knot on plum trees he had been advised to cut off the diseased limbs and to graft in another variety. He had tried cutting the branches close to the trunk and found it effective and had got rid of the black knot on his trees.

The Lecturer said that the trouble in cutting off the limbs was that they were usually not cut close enough, otherwise some of the mycelium of the fungus would still be left to propagate the disease.

Varnum Frost spoke in favor of severe pruning as a remedy for black knot and it was the method he used. He said that the lecturer had told us some important things, but he had not told some other important things as, for example, the cause and cure of these diseases. There was one objection to Bordeaux mixture and that was its stickiness; it adheres like paint to melons and cucumbers and leaves stains on trees. He thought that the continual growing of crops, year after year, in the same soil brought on disease and rot. Potatoes will not do well in an old cultivated field, but plough up a piece of grass land and you will get a good potato crop. He did not have a very favorable opinion of the results of scientific investigations in agriculture.

J. Woodward Manning said he thought some exceptions should be taken to the remarks of Mr. Frost who had been a farmer and a good farmer for many years. The experiment station people are taking the only proper course to follow: that of studying into the life histories of these fungi and the cure will be found later.

Michael Sullivan called attention to the diseases of the onion and thought that the statement concerning the bad results of continuous cropping was true. These diseases appear to be dependent on climatic and soil conditions. He had noticed also that the white maggot was intermittent in its ravages, suddenly appearing and as suddenly disappearing. The effort of the market gardener has been to improve the old-fashioned Danvers onion by giving it a round or oval shape and to enlarge its size and we have succeeded in accomplishing it.

The Lecturer said that spraying was not always effective and that places where crops had been grown continuously were breeding places of disease. The season is also an important factor in these things and the weather conditions were responsible for the great development of fungous damage in vegetable growing. He advocated the clearing up and burning of the refuse in cultivated fields instead of leaving it on the ground through the winter thereby furnishing breeding material for the fungus spores which are capable of being carried through to another season by its aid.

Varnum Frost spoke on modern methods of farming which he said could not produce crops such as were raised forty years ago. He did not take any stock in the sterilization of the soil and gave an instance in which it had proved a failure, and in cases where it had been a success the first year, bad results came from it the second and third years following.

Warren W. Rawson replied that he could not hear sterilization denounced without rising and telling what it had done for him. He attributed his success to sterilization and since its introduction he had had very little trouble with the diseases that formerly cost him much loss and damage. It had been of the greatest value to him also as an exterminator of vermin and enabled him to grow good crops. When anyone says a word against sterilization he must speak in its defense. If some people do not have success with it their failure should not be charged to the process but to their own ignorance of the proper way of handling it.

Hon. Aaron Low remarked that we do not get in Massachusetts as great crops now as we did forty years ago. Then we produced large crops of tomatoes, cucumbers, potatoes, and melons. He remembered the large fields, acres in extent, of tomatoes and melons, but owing to the ravages of blights and rots it was now a difficult matter to raise a crop. In Hingham last year a certain field he knew of planted with melons proved a total failure; not a melon was grown on it.

Farmers will not now attempt to grow them by outdoor culture and they have to be raised under glass. It is now an absolute necessity as compared with former years to spray everything to protect from the blight in order to get a crop. The spread of blight affects tomatoes seriously but is most disastrous on melons and cucumbers.

William N. Craig spoke of the rot in the bulbs of iris to which the lecturer had referred and which had been attributed to too deep planting and excessive moisture. He had noted the rot in *Iris Germanica* and it had spread to *I. Hispanica* and *I. Anglica*; *I. Kœmpferi* also was affected. He asked if the lecturer had made any observations concerning this trouble and suggested that these blight diseases may be propagated in the seed, for this blight appeared in May last which was an abnormally dry month.

He had found that melons whether sprayed or unsprayed succumbed to disease, but there was no trouble in growing English melons in the hothouse.

The Lecturer said that fungous diseases were sometimes disseminated in the seed, either by spores on the surface or by the mycelium inside, out of reach. In a dry season the diseases would be very likely to disappear; in fact, the season is an important factor in fungous growth and it is hard to fight in damp weather. Regarding the iris he had made no special study of the rot affecting it, but it was known to be a bacterial disease.

Samuel H. Warren remarked that after listening pretty attentively to the discussion of this subject he thought there might be some doubt as to whether these diseases were a blessing or a curse to the growers. If there were nothing to prevent the growing of full crops there would be such an over supply that they could not realize anything for the products and the crops might as well be destroyed before raising as after they had gone to market.

THE PROTECTION OF NATIVE PLANTS.

BY ROBERT TRACY JACKSON, CAMBRIDGE, MASS.

Read before the Society, March 5, 1904.

The effort to do something to protect and thus maintain our wild animals and plants instead of indiscriminately and even wantonly destroying them is seen in a number of ways. Our fish and game laws look to the preservation of game animals for their own sakes and in the interests of sportsmen. The Audubon Society attempts to check the destruction of our native birds, working on the humane and far-seeing principle of allowing the birds to live unmolested by man, for their own sakes, the pleasure we may gather from them, and the good they will do in the destruction of insect pests.

The widespread forestry movement has attained important standing as an effort to protect, improve and increase our forest areas. Here the objects are the production of timber as a crop, the preservation of the water supply and the checking of floods, both of which are helped materially by forested, as compared with unforested areas. The protection from denudation of hilly or mountainous country and the utilization and permanent increase in value of "waste land" are other important aspects of the forestry movement. The protection of forests for their intrinsic interest and the fostering of tree planting for the beautification of our country and suburban streets are other aims in view. Such work is actively pushed by the Massachusetts Forestry Association, the President of which is also our honored President.

With our great tract of country and wide and abundant distribution of animals and plants, it used to be felt that the supply was inexhaustible and therefore wantonly extravagant waste has occurred. That this view was erroneous is amply proved by the practical extermination of the buffalo and passenger pigeon. Wild turkeys were once abundant in this vicinity and might still

be in Massachusetts but for the incessant warfare waged upon them. White pine of commercial size is coming from constantly more remote regions, and the available supply of other timber trees is rapidly becoming less. Of smaller plants many have quite disappeared from this vicinity though they once grew here more or less abundantly, such as the mayflower, Arethusa, *Habenaria dilatata*, the maidenhair, and walking-fern, all, it is to be noted, plants of exceptional charm.

Turning to the consideration of the protection of plants, the larger plants or trees need protection and fostering care most emphatically, and such care is one of the large problems before the country. In the smallest plants, as moulds, bacteria, etc., the shoe is on the other foot, for in many cases, at least, it is we and not the plants that need protection. The plants to which I would call attention are the shrubs, herbaceous plants, and some annuals which by their charm of form or flower, or by their rarity in some cases, are likely to be eradicated or so reduced in numbers that they will no longer be a salient feature, at least in regions within easy access of our towns and cities. What causes the disappearance of plants? First and foremost are the axe and the plough. With the cutting down of forests, the spread of cultivated land and the extension of towns and cities, regions once populated by native animals and plants give way to the changed conditions. In the natural areas that are left in the vicinity of towns, or in more remote regions, the disappearance is of another kind, and here it seems some check may be operative.

Plants are unquestionably much reduced in number by the thoughtless picking in unreasonable quantities and the too often unnecessary pulling up by the roots, when the upper part, or flower, is really the only portion desired. Frequently the interest seems to be to gather as many as possible and the fact of rarity or exceptional beauty may act as a spur to induce the gathering of all that can be found. The principle that should be urged is, to gather in moderation, to always cut the stem, not tear it off, never to pull up the root unless for transplanting, and if there is reason to believe that the plant is rare, to leave it to increase its kind by seed and root, that in the future others may enjoy its presence.

With children it is particularly common to feel that the result of a successful gathering of wild flowers is to be measured by the quantity. A better principle to urge would be to instil into them as well as their elders the feeling that a plant as a living organism has a right to existence, and it is a pity to destroy its life, as they are more easily led to see is the case with an animal. Do not prevent the picking of flowers, for it is a perfectly natural and reasonable desire; simply urge moderation and regard for the rights of the plants to live, and for the future enjoyment of others.

Many flowers may be picked with impunity as freely as may be desired, such as asters, goldenrod, wild irises, most violets, roses, elders, barberries. These are all beautiful, common, and rapidly and freely reproduce their kind. An extremely good leaflet addressed to the flower-loving public and explaining how they can help to protect our native plants was issued by the Seal Harbor Village Improvement Society and later was published in Rhodora, the Journal of the New England Botanical Club. In order that it may reach another set of readers it is republished at the end of this paper.

After the axe and the plough, the worst enemy of our native plants is the commercial collector. He may collect the flowers, fruits, foliage, or the whole plant, and in view of the fact that every one gathered means just so much more money, it is natural that most serious inroads are made by this means. It is only when plants are sufficiently reduced in a given locality as to be too rare to pay for collecting, that the commercial collector is likely to stop of his own initiative. Owners of land could doubtless do much to check commercial collecting by posting notices of "No trespassing." A notice to the following effect would be more in the spirit of the present consideration, *Shooting, the picking of flowers, fruits, shrubs, trees, ferns, or mosses and the removal of plants is prohibited on these premises.* Similar notices printed on cotton cloth have been issued by the Botanical Club of Franklin Falls, N. H., and The Society for the Protection of Native Plants.

The legal penalty attached to the infringement of such rights of the owner of property is as follows. Revised Laws Chap. 208,

section 99. "Whoever wilfully cuts down or destroys timber or wood standing or growing on land of another .... or digs up or carries away .... roots, fruit or any plant there being, ... without the license of the owner thereof, shall be punished by imprisonment for not more than six months or by a fine of not more than five hundred dollars, ..." Laws to protect the sale of plants as the climbing-fern and mayflower have been enacted in Connecticut; but are not operative here.

The setting aside as reservations, of areas in which no collecting is allowed is most desirable. Such is seen in our parks, the reservation of the White Pines in Carlisle, through the Massachusetts Forestry Association, the reservation bearing *Rhododendron maximum*, in Fitzwilliam, N. H., through the generosity of Miss Mary L. Ware, and the attempt on foot to reserve the Sequoias or big trees of California.

Certain plants, especially those of commercial importance, need protection in a special degree and I would call attention to some of these. Our mountain laurel, or *Kalmia latifolia*, is one of the most beautiful of all our native shrubs, both when covered with its masses of white and pink blooms in early summer and for the rest of the year on account of its rich green foliage. Being evergreen, which very few of our northern shrubs are, it makes a striking feature in the winter landscape. Not found in other countries, mountain laurel is an essentially American plant and its striking beauty of flower and foliage renders it one of the choicest of known shrubs. Its attractions combined with lasting qualities induce a wholesale cutting of laurel to an alarming extent. It is collected extensively for decorative purposes twice in the year. In summer, when in bloom, it is cut, or too frequently torn off, for church and house decoration and for sale in the markets. As the flowers are firm and last well after cutting, it bears transportation and can therefore be handled on a truly commercial scale. In winter the cutting of laurel is much more extensive. It is then gathered in enormous quantities for the Christmas and other winter decorations of churches, ballrooms and private dwellings. In winter the cut foliage bears transportation so well that the quantity cut depends only on the demand and amount of material to be found in the woods and pastures.

In looking at long festoons of mountain laurel, it really is saddening to think of the quantity of blooms prevented for the ensuing summer and the numberless bushes mutilated to supply even one large decoration. When the total amount used as winter greens for a single city like Boston is considered, it seems that we must call a halt in this excessively extravagant cutting of laurel, or we shall have this exquisite plant reduced to relative rarity in all readily available localities. I know of two churches that refrained from using laurel when their attention was called to the matter, and if others would follow suit, the demand thereby being greatly reduced, danger would be averted. The various species of pine are equally beautiful and quite as effective as a winter decoration as laurel, and it seems that those engaged in raising and cutting pine and spruce would be only too glad to get a market for the actually wasted branches, for those are all that the decorator would want.

Holly is another plant that is gathered in extensive and dangerous quantities. Being of slow growth, and practically impossible to cultivate, at least on a commercial scale, the wild plants are the sole source of the Christmas supply brought to our large cities in such large quantities. One does not have to be very old to know it is a modern custom to supply holly, at least in quantities. The source being limited, it is believed that it cannot last long under such wantonly extravagant cutting. A friend of the writer literally has to guard his property on Cape Cod, Massachusetts, before Christmas to prevent his holly trees from being hacked to pieces. If protective legislation should be enacted to prohibit or check the sale of native plants, the holly and the mountain laurel need it perhaps more than any others that could be mentioned.

Ground pine is used in such quantities for winter decoration that it is comparatively scarce in regions where once abundant. The use of pine and spruce for green effects in winter, as above suggested, would go far to protect this humble and attractive plant.

Mayflower, or *Epigæa repens*, has been practically exterminated in some sections and is collected in inordinate quantities for sale. It seems that the only way this can be checked is through public sentiment in the matter of purchasing, by posting prohibitive

notices on land where it is collected, or by special legislation in this State as in Connecticut. Fringed gentians and Sabbatia are other plants the flowers of which are collected in such quantities for purposes of sale that seedage must be seriously interfered with. Both plants are annuals, or biennials, and a large crop of flowers must be left to develop seeds or the plants in a given locality will die out.

Our evergreen ferns, especially the christmas fern, *Aspidium acrostichoides* and the shield fern, *Aspidium spinulosum*, are collected in enormous quantities, kept in cold storage and used by the florists in winter with cut flowers. While the plants previously mentioned probably can never be grown on any extensive commercial scale to supply the market, these ferns could be, as they are as easily grown as many other crops and can be cultivated in places that are practically unavailable for most crops, namely wooded spots and places with northerly exposures.

Many native plants, like bloodroot, Podophyllum, solomon's seal, Veratrum, etc., are collected extensively for medicinal purposes; in these cases it is the root that is taken, necessarily destroying the plant. All of these plants are easily cultivated and could be grown on a commercial scale for the supply of the trade. In fact, similar plants are now grown in Europe for this demand.

There is strong prejudice in the minds of some against the cultivation in the garden of native plants, the feeling being that we are robbing our woods and fields and that such plants are out of place in a garden. If we stop a moment to think of the matter, a large part of our decorative cultivated plants, especially trees and shrubs, are the original species and wild somewhere, either in this or some other country. Obviously all plants cultivated are either the original species or varieties produced in cultivation or otherwise. The principle should be to collect from their native haunts only such plants as can be cultivated with reasonable assurance of success, and to propagate such plants by seed or division in nurseries rather than depending on collected material. Such nursery-grown plants are unquestionably better stock for cultivation. Our dealers in native plants, in the spirit of fairness to customers, as well as for protection of plants,

should indicate in their catalogues species that are difficult or practically impossible to grow. Such plants have no place in cultivation excepting in the hands of expert growers. Unquestionably the collectors of native plants for cultivation do a very serious damage in cleaning out localities of native species, which, if worthy of cultivation, should be propagated in nurseries.

Societies for the protection of native plants have been organized in numerous places, either independently or in connection with botanical clubs or village improvement societies. Such organizations are all valuable as an aid in spreading the spirit of protective care, rather than destructive waste, a care for the plants for their own welfare rather than looking at them merely as a source of ephemeral decoration, used often in inordinate quantities and soon thrown away.

In the year 1900 a few ladies in Boston inaugurated the Society for the Protection of Native Plants, with the expressed idea of trying to do something to check the commercial sale and the needless, often thoughtless, destruction of native plants. There are now over six hundred members and the society has affiliation with fifty-one schools in Massachusetts, as well as schools, libraries and village improvement societies in various parts of the country. The society publishes leaflets on the subject of protection which are distributed to members. The secretary is Miss Maria E. Carter, Boston Society of Natural History, Berkeley St., Boston, Mass.

Another society which is inaugurated for the protection of our native plants is The Wild Flower Preservation Society of America, with headquarters in Washington, D. C. Its members receive the Plant World, a journal of popular botany, in which there have appeared many interesting and practical articles on the protection of native plants. The address of the secretary is Mrs. N. L. Britton, New York Botanical Garden, Bronx Park, New York City.

A LEAFLET OF THE SEAL HARBOR VILLAGE IMPROVEMENT SOCIETY.

[Reprinted from Rhodora, vol. 5, no. 58, October, 1903, p. 259–260.]

[It is well known that in the neighborhood of our summer resorts, many of our native plants are becoming less abundant every year, and some of them are in great danger of extermination. The number of plants gathered by plant lovers for various purposes is far greater than one would suppose. A year ago it was suggested to the Village Improvement Society at Seal Harbor, Maine, that something might be done to check unnecessary and careless gathering of the native plants in that part of Mount Desert Island. In consequence of this suggestion a committee was appointed to consider the matter. As one result of this action a circular was prepared by two members of the committee, Prof. Samuel F. Clarke and Mrs. Frances Theodora Parsons, which was widely distributed through the village. So many instances have been observed in which the recommendations of this circular have been adopted by the summer visitors that it seems well to give it a still wider circulation. It is therefore reprinted below with only a few unimportant omissions relating to local plants. — Ed.]

It is to the interest of every visitor to Mount Desert that its beautiful and characteristic plants be guarded from extermination. It is believed that everyone will be ready to aid in this work if once he, or she, fully realizes the danger with which these plants are now threatened.

It is not our wish to discourage unnecessarily the gathering of wild flowers and ferns for decorative purposes. We ask only that they be picked with care and discrimination. Such a flower, for example, as the blue-bell, which forms so beautiful a feature on the rocks along the shore, should always be cut with the scissors or a knife, rather than picked, to prevent its being uprooted, and even when cut, care should be taken to gather it only where it grows most abundantly, that no picturesque tuft be so completely done away with as to set no seeds for another year.

Where there is an especially fine plant or colony, or where there is a single plant or small colony, why not leave at least half the flowers for seed, in the one case giving nature a chance to perpetuate and develop the best, and in the other, helping nature to extend her work of beautifying our surroundings?

The pink lady-slipper, or moccasin flower, the purple fringed orchid, the Calopogon, Pogonia, and indeed all the orchids, should be cut (not picked) fairly high up the stem, leaving, whenever possible the lower leaves intact.

If these flowers are not to be exterminated they should not be gathered at all unless found growing very abundantly, and then only in moderation. Such fragile blossoms are more effective if not heavily massed, but arranged a few sprays by themselves.

From the purchase of the rarer flowers, especially of the purple-fringed orchid, by the roadside, we urge everyone to abstain. The country children who offer them for sale, are, innocently enough, the most dangerous enemies of all rare, salable flowers.

Ferns, also, should be picked with care, and not too freely, unless in spots. where they are unusually abundant. The same caution should be used against breaking branches from shrubs and trees in so rude a fashion as not only to cause a temporary disfigurement, but perhaps a permanent injury.

The hobble-bush, whose effective leaves and brilliant berries decorate gaily the woods of late summer is frequently a victim to careless picking.

The flowers growing in the immediate neighborhood of the roadside are a joy to the many. Is it too much to ask that these be left to delight the eyes of the passer-by, and that the flowers desired for decorative purposes be sought a few feet from the highway, or even from the trail? These roadside plants are constantly enjoyed by those who, by reason of age or some infirmity, could otherwise never see them. Were this once realized few would hesitate to take the trouble entailed by half a dozen extra steps.

We should not fail to add that many of the most effective flowers may be gathered away from the wayside without fear of doing any permanent injury. Daisies, buttercups, clover, wild roses, meadow-sweet, steeple-bush, asters, golden-rod, and other vigorous and abundantly growing plants will yield ample material for decoration and may be gathered almost with impunity.

To sum up we urge:

1st. Moderation. (Not gathering too many flowers of the same kind in one locality.)

2nd. Care. (The use of scissors or knife.)

3rd. Judgment. (Guarding of the roadside and conspicuous locations.)

4th. Occasional total abstinence. (In case of especially rare flowers.)

Discussion.

Mrs. E. M. Gill asked if the Sabbatia could be grown in the garden.

The Lecturer replied that it is difficult to cultivate the Sabbatia, but he had seen it growing successfully in gardens. The best way is to gather the seed and raise the plants in that way.

William P. Rich remarked that he was interested in the sub-

ject of the lecture and that the cause of the destruction of the native flora was the building up and growth of the cities and towns, and that this was inevitable. He said that there was in the herbarium of the Society a collection of native plants made about the year 1850 in Roxbury, Dorchester, and Brookline, and that hardly any of them could be found there today. He had seen also, not long ago, a collection of plants of several hundred species made in the neighboring city of Chelsea, about the year 1840, not a single one of which could be found there now. The localities where they were collected are covered with paved streets and brick blocks.

It was thought by some of the members of the Society for the Protection of Native Plants that the work of our Committee on School Gardens and Native Plants had a tendency to help in the destruction of our flora by encouraging the children to collect and exhibit specimens at our exhibitions. But he thought this work of the Horticultural Society rather helped than otherwise in their protection, for it inspired in the children such an interest in the plants that it made them guardians rather than destroyers of them.

The main cause of the disappearance of our wild flowers besides those previously stated was their ruthless collection in large quantities for merely temporary gratification or for commercial purposes.

The botanist of the future in the vicinity of cities and towns would have a barren region in which to study the native plants He agreed with the lecturer that no great harm would come from encouraging in the children an interest in our wild flowers.

Jacob W. Manning said he knew of two carloads of mountain laurel being shipped from a New Hampshire town last fall.

Varnum Frost said that he had lived a good many years in the locality where he now resides and that he could not see that there was any great diminution in the wild plants. In fact the daisy, goldenrod, and ferns ought to be exterminated. The laurel was as prolific as a barberry bush; the more you cut it the better it comes up, and as for ferns, it was well-nigh impossible to exterminate them. Children gather ferns but they do not disturb the roots.

Michael Sullivan remarked that this lecture well illustrates the

first step in nature study and that it was well to encourage the children of the city to get out into the country. He came from a locality where, along the marshes, was a great abundance of wild flowers. Asparagus came originally from the seashore.

The Lecturer stated that it is not difficult to cultivate our native ferns in the usual garden soils. He had grown nearly all of the ferns native to New England and was surprised at the ease with which most of the species can be cultivated.

Varnum Frost called attention to what he considered a serious problem of today: the protection of birds. He said that birds contribute more to the race of mankind than anything else. They are the insect destroyers and the wholesale destruction of bird life should be stopped. With the exception of the English sparrow there is not one bird today where there used to be a hundred. In England you see many more birds than here.

Edward B. Wilder said he lived on the border of Franklin Park and that it was a great luxury for the children to visit this place and enjoy the common wild flowers that grew there. He believed it to be a source of refinement and culture.

George E. Davenport remarked that he would like to say one word about the influence on children of an interest in native plants. He had had some experience in this subject in connection with the school-garden movement in the Medford schools. He agreed with Mr. Rich that this interest of the children tended rather to protect than to destroy and, furthermore, since the initiation of this movement in the schools he had observed, and it had been noticed by others, that there had been less depredation on private gardens than formerly and the children had respected them because of their own interest in plants.

The question of how best to protect our native plants is one of widespread interest over the whole United States. We cannot stop the natural growth of civilization before which the plants must be crowded out, but we can do some things to protect those that remain.

One of the instructions of our School Garden and Native Plant Committee is to discourage the taking up of the roots of plants and also to instill into the minds of the children the idea of preserving the rarer species by leaving enough to go to seed and thus to insure them against unnecessary destruction.

THE GLADIOLUS.

BY ARTHUR COWEE, BERLIN, NEW YORK.

Read before the Society, March 12, 1904.

Early in my experience with the gladiolus, being obliged to assume more important responsibilities in connection with other business interests, I was unable to develop the industry as I had planned; and in the manner in which I have been obliged to handle it, advancement has not been as rapid as anticipated until within the past five years, during which I have been able to devote to it more time and attention. I have been preëminently aided by a gentleman who has made a careful scientific study of the breeding of this flower for upwards of twenty years, Mr. H. H. Groff of Canada, a banker by profession, but at the same time the most successful and enthusiastic gladiolus hybridist of the world.

Until I saw his creations, I had been spending thousands of dollars upon foreign and domestic novelties to be again and again disappointed, not only in the quality of bloom, but in the weak vitality of the corm. I do not wish to be understood as representing that there are few excellent novelties, for there are many; they are being fast superceded, however, by the later hybrids, bred upon correct lines as to vitality of corm as well as beauty, size of flower, length of spike, etc.; a stock which rarely disappoints the purchaser. Some of your Boston seedsmen were among the first to realize this fact and have already reaped the benefit of an increased demand for these hybrids.

The "Florist's Exchange" of New York in its review of floricultural advancement for 1901 made this statement: "the most noted advancement along floricultural lines seen at the Pan American was that presented by Groff's Hybrids." I might add here that advancement has been more rapid in the direction of quality since that report.

While you will expect me to speak of the gladiolus in general from the growers' standpoint, I trust it may be pardoned if I dwell more upon those varieties or sections which are not only surprising the amateur, but are also a source of wonder and admiration to the professional gardener and grower as well, the speaker included.

The gladiolus in its wild state is a native of Central Europe, the Mediterranean region, Western Asia, and Africa. The headquarters of the genus, however, are in South Africa. The different species are too numerous to mention. Most of them produce very small flowers compared with the modern hybrids, and few are of much value to the successful hybridizer of today. Such varieties as *Gandavensis*, *Lemoine*, *Nanceianus*, and *Childsii* are too well known for me to dwell upon.

The best soil for the gladiolus is a sandy loam containing a slight trace of clay, but only enough to assist in retaining moisture. Fall preparation of the soil is preferable, but if neglected at that time, spring fertilizing should be done with thoroughly-rotted manure, and care should be exercised so that the bulbs do not come in contact with it. While the cultivation of the gladiolus in the garden is most simple, and it may be assumed by the amateur and distributor that the cultivation of the bulb for market is equally so, I can from experience assure you this is not so with the successful grower. Careful selection of soil best adapted to the different strains is most important; and the correct amount of proper food to use, shallow or deep cultivation, are among the many details which enable the grower to produce strong, healthy bulbs which are quite necessary to withstand the many different climatic conditions under which they must be planted.

The directions for the cultivation of a large acreage of gladioli may not be as interesting as some suggestions as to the best methods of garden culture, but I trust you will bear with me for a few moments while I tell you something about the care and labor required to plant, cultivate, and harvest seventy acres. The time for ploughing (in the fall) is necessarily short, for the ground where bulbs have been grown one year must be used, or new soil from which the crop of potatoes, corn, grass, or grain has been

removed. All stable and coarse fertilizers are worked into the soil at this time, while the chemical fertilizers are placed in the drills before planting. In the spring the ground is again loosened and drilled. The bulblets, three-eighths of an inch in diameter and upward, graded by screens, are placed in the drill, one and two inches apart according to the size, and two, three, and four across the row accordingly, and are then covered with earth. The large stock is planted in rows thirty-three inches apart, while the small cormels (black) are sowed in rows twelve inches apart. This labor requires about one hundred men and boys. Weeding in some seasons is a most expensive operation; the past season was one of the worst we have ever experienced in this regard. After the spikes begin to appear above the surface, horse cultivators are kept busy in the larger stock, and it is not unusual to see half a dozen wheel hoes in operation in our fields. After the buds begin to appear in the large stock all cultivation ceases.

During the blooming season the roguing and classifying is done mostly by girls as they have a better eye for colors, and such bloom as is not marketed (and this is but a very small proportion) is cut upon the ground as soon as possible after the first-opened flowers begin to fade. By doing this we prevent the formation of seed and throw this strength, which would otherwise be wasted, into the bulb.

At harvest time ploughing on either side of the rows loosens the earth and raises the bulbs sufficiently so that they are easily lifted by hand and the tops removed, after which the bulbs are spread upon the curing sheets upon which they remain for from one to three days. They are then placed in trays in the bulb houses where, until planting time, the temperature is kept as near forty degrees as possible.

The tedious work of removing the roots is done at leisure during the winter by those employed during the outdoor season who have been the most faithful and have shown a desire to become more proficient and valuable.

The grading, counting, and execution of orders as well as the arranging of planting stock are performed by the most experienced men, and with over ten thousand bushels, which was the harvest of 1903, this is in itself no small task.

While personally I have given little attention to hybridizing, my part of the work being the commercial end, still I have made many and extensive experiments with fertilizers to the end of producing an exceptionally strong and healthy bulb; and while I have been recently called to account for making the statement that I have succeeded in this direction, let me say that I am prepared to demonstrate that I am correct. Some of my experiments were made on the same principle by which the fruit grower produces wood growth with one kind of food, while with another, he produces more, larger, more beautiful, and more delicately flavored fruit. It is also a well-known fact that the farmer can and sometimes does grow most beautiful potato vines, to the detriment of his crop of potatoes, by the excessive use of improper food. Suffice it to say that I am more than gratified with the results secured by my efforts in this direction.

These questions are frequently asked: What are Groff's Hybrids? How do they differ from others? and, How do they compare with this or that variety? Answering this, let me say, that there is not a wild species (and there are about 150 of them) together with many cultivated varieties, with which Mr. Groff has not experimented. Many of these wild species were obtained from botanical explorers.

The early Groff's Hybrids were the results of crossing the species with the (then) best commercial types. The later hybrids are from species both wild and domestic (the latter of which are yet unnamed by the originator) crossed with the best novelties obtainable in the world (irrespective of price) as well as with new and stronger types produced by Mr. Groff. I can safely say that if you are familiar only with the ordinary gladiolus, or even if you have planted quite largely the high-priced European and American novelties, you have no idea of the grand surprises in store for you from the many thousand varieties contained in these new hybrids.

In some of these hybrids will be found traces of the blood of well-known species, such as *psittacinus*, which is one of the parents of the hybrid *Gandavensis*, the other parent being *cardinalis*, according to one authority, while another gives *oppositiflorus* as the other parent. Another, *Saundersii*, which combined

with a Lemoine hybrid produced the variety *Nanceianus*. Another, *purpureo auratus*, which with a Gandavensis hybrid gave us the Lemoine variety; and so one familiar with the different wild species might find here and there traces of the different bloods. Not so however with some of the later Groff's Hybrids, many of which are practically a race by themselves, the origin of whose parentage would baffle the most careful scientific searcher, and, indeed, would be quite a task for the originator to trace. These hybrids have been bred with the idea of furnishing quality equal and superior to the high-priced novelties, and at a cost which will permit the purchasing of quantity, rather than to restrict the number of varieties by classifying and naming, which on account of the extra expense in preparing, would necessitate prices that would prevent liberal purchases.

The old system of purchasing by name however seems to retain a strong hold in some sections of the country, and to meet this demand many fine varieties from these hybrids are under preparation for dissemination in this manner.

I wish to refer to one subject upon which I believe gladiolus purchasers in general are not well informed: that of unbloomed seedlings. In the first place the good reputation of the successful hybridizer is jeopardized by the dissemination of such stock even though by his skill the percentage of undesirable varieties may be small. Therefore he will first bloom upon his trial ground before offering.

While the seed produced by the promiscuous hybridizing of bees, butterflies and other pollen carrying insects may result in some fine creations, the percentage of such is small. The buyer of these seedlings is not aware of these facts and, expecting surprises, is, in the majority of cases, bound to be disappointed. Even though some excellent creations may be secured in this manner, the strength and vitality of such is not to be relied upon.

To illustrate this fact to summer visitors to my fields I yearly select some of the above-mentioned seed and develop the same for comparison.

During the past two seasons I have had the honor of escorting about my fields, accompanied by their guests, many visitors prom-

inent in the western part of your state, and while it is not customary to allow other than the laborers to pass through the rows, we sometimes make exceptions. Late last season, when the fields were nearly through blooming, my foreman and I started with four ladies through a block about 300 feet long, giving them permission to select any blooms they fancied, which we would cut for them. After they had secured all they could carry, one could not have cut a good-sized armful from the rows through which we had passed.

These ladies, too, were not strangers to gladiolus novelties. Imagine therefore, the unlimited task of naming a field of such stock, few of which according to the required standard would remain unnamed.

Last season I had the pleasure of shipping to several horticultural societies (yours among the number) blooms from my fields which were not to be entered for competition but simply to illustrate the endless number of types and varieties of high quality contained in these hybrids. Perhaps your experience with these blooms may have been similar to that of one of my valued customers, a member of one of your horticultural societies, who commented upon my exhibit in this manner: "Why is it that your flowers exhibited before our society are not as large as those I secured from the same stock purchased from you? Do you fertilize enough? Would it not be well for you to specially fertilize for exhibition purposes?" My reply to these queries was to the effect, that I would much prefer to place in the hands of the consumer a bulb which would produce results far beyond his expectation, rather than, by special fertilizing, to be enabled to exhibit at horticultural meetings blooms which it might not be the good fortune of the amateur to secure without employing the same method of feeding. I contend that it is perfectly legitimate for the amateur to employ any means at his command which will aid him to produce and exhibit superior flowers. The grower, however, deceives his patrons and the public in general when he exhibits specially prepared blooms without giving a detailed information as to how they were secured.

While there are many trials and disappointments in this, as

well as in the development of most industries, still it has its bright side. The most pleasing and satisfactory innovation which I have inaugurated is the weekly shipment of quantities of bloom to the fruit and flower missions in New York, for distribution among the sick and poor children of the East Side. Through the generosity of the American Express Co., who make a special rate for this work, I am enabled at a small cost to brighten the homes of these children whose eagerness for, and appreciation of these flowers must be seen to be best appreciated. Many of them, too, never see any flowers other than those distributed by these missions. Although the most of these missions are sectarian, my flowers are distributed irrespective of creed. I happened to be in New York the past season upon the occasion of one of these distributions, and I can assure you that I felt more than repaid for the expense of the entire season. I think at this time that there were not less than three hundred children, with many mothers who brought the smaller ones on account of their not being able to stand the press of such a crowd.

In conclusion let me say that Meadowvale Farm is not far distant from your city, and although the train service upon our little railroad is not of the best, it is possible for one with limited time to leave Boston one night, spend the entire day following at Berlin, returning to Boston the next morning in time for business. To the members and friends of your society I extend a most cordial invitation to visit my fields, which are at their best during the month of August, and I can assure you of at least a view of the largest field of this flower in existence, as well as some of the most beautiful mountain scenery of which Western Massachusetts and Eastern New York can boast.

Discussion.

William N. Craig said he had been much interested in the lecture and referred to the statements made concerning the experiments with fertilizers; but the lecturer had not told us which kind he found best for gladiolus.

Mr. Cowee replied that he was often asked this question but he could not afford to tell what kind to use for the bulbs. He had

found out by experience that which was best suited for the purpose but it was necessary for him to keep it a secret as a business precaution against his competitors.

Robert T. Jackson inquired if there was any advantage in cutting bulbs.

To this the Lecturer replied that there was no benefit to be derived from cutting bulbs. If the bulb does not produce satisfactorily we throw it aside. His varieties increased fast enough without cutting. There was, however, one variety that he could do nothing with, the White Lady, a very beautiful white gladiolus, but of such weak vitality that the crop is often a failure. Mr. Groff had experienced the same difficulty in growing it and it has been stated that even the originators of the variety in Germany have trouble with it on account of its weak constitution. It is reported, however, to do much better in California.

Dr. Jackson inquired if it would be possible to grow the gladiolus from fall-planted bulbs.

The Lecturer answered that we never plant in the fall; that he had never found a hardy gladiolus; and that he did not believe there was such a thing. It was of course possible that a bulb especially protected might accidently live through the winter. If the bulbs are kept in a cool place they do not dry.

Mr. Craig asked what fertilizer is best for the flowers, if not for the bulbs.

The Lecturer said that he had found the best fertilizer to be equal parts of stable and cow manure, thoroughly rotted and well mixed with the soil, and in addition a light covering in the spring of a mixture of one part bone meal and three parts ashes. He had experimented with many chemical fertilizers and had found this formula best for the development of the flowers. He had been obliged, at times, to resort to the use of chemical fertilizers on account of the scarcity of stable manure and the expense of obtaining it from a distance.

William P. Rich, referring to the statement of the lecturer that his crop of bulbs last year was ten thousand bushels, asked if he was able to market that quantity. To this the Lecturer replied that in every previous year he had marketed his entire crop and he had determined to plant enough until he had a surplus. At present he was short of a good many sections.

Benjamin P. Ware asked how deep the bulbs should be planted.

The Lecturer answered, from two to four inches.

A person in the audience inquired how early in the season they should be planted.

The Lecturer stated that he made plantings as early as April 9 and again April 15 and found those planted at the latter date bloomed first.

Mr. Craig asked concerning the preparation of the soil for planting the bulbs.

The Lecturer stated that deep culture is desirable, about ten inches in depth, and the fertilizer well worked into the soil in the fall. In the spring the ground should be again thoroughly worked over. There is no objection to leaving the roots on the bulbs although he was accustomed to rub them off during the winter.

A question was asked concerning the diseases of the gladiolus which the Lecturer answered by stating that he did not know much of anything about that for he did not have any diseased plants. As soon as any such symptoms appeared the sickly specimens were thrown out. Sometimes spots appear on the leaves but a change of soil will rid one of them. He did not grow his plants more than two years in the same ground. With the exception of the White Lady gladiolus previously mentioned he had not been troubled by any failure of crops through disease.

Another question proposed was, When should the bulbs be taken up out of the ground?

The Lecturer replied that they should be taken up as soon as the foliage had turned a little brown, rather than to wait until the spike was thoroughly dry and that the spike should be removed immediately after digging.

Mr. Craig asked as to the correct pronunciation of the word "gladiolus" for he observed that the lecturer pronounced it in two different ways — "gladī'olus" and "gladiō'lus."

The Lecturer replied that the word is variously pronounced but "gladī'olus" — accent on the second syllable — is the pronunciation given by Webster. His youthful habit of pronouncing it "gladiō'lus" — accent on the third syllable — sometimes got the better of him. Still another form was "glad'iolus" — accent on

the first syllable — which was sometimes heard and is the way it is pronounced by Mr. Groff.

On motion of Mr. Spooner a vote of thanks was given to Mr. Cowee for his interesting paper.

THE PEONY.

BY GEORGE C. WATSON, PHILADELPHIA.

Read before the Society, April 2, 1904.

By way of introduction a few words are necessary to explain why an amateur like myself should presume to appear before this Society to speak on the subject of peonies. I am not a peony expert but merely a lover of this king of border flowers; an onlooker whose delight and wonder at the development of what may be termed the modern peony is unbounded and who takes an equal delight in trying to impart some of this enthusiasm to others.

Although my official connection with the Peony Association which had its inception at the Asheville Convention of the Society of American Florists, in 1902, might lead some of you to expect that I would say something about the nomenclature of the peony, I may state that the matter is only in its initiatory stage and it will take a long time before definite results can be obtained. A nucleus of a test collection has been formed in Fairmount Park and this will be increased from time to time. The number of varieties planted is small as yet and the effort can only be termed a step in the right direction so far.

But the matter of nomenclature, though important, need not hinder efforts to still further popularize the modern peony by exhibitions, by lectures, by articles in the horticultural press, or by any other means that may suggest themselves. For although the past ten or fifteen years have witnessed a great increase in public favor, it is as yet nothing to what the merits of the subject entitle it. Mention a peony to the average owner of a garden and nine times out of ten the flower that occurs to his mind is the old double red of our grandmother's garden; very good in its way but without fragrance, or size, or form, and not to be compared with the gorgeous, many colored, fragrant masses of bloom which go to the make up of the modern varieties.

One reason why more peonies are not grown is the comparative slowness of propagation as compared with roses and other popular flowers. These latter can be quickly raised from cuttings but we have to depend on root division for propagating the desirable varieties of peonies and good pieces with two or three eyes cost a great deal more to produce than a young rose plant. As for new varieties these are raised from seed and four or five years must elapse before they bloom. From a commercial standpoint the peony is emphatically not the plant for small capital and quick returns. It takes money, time and patience to get results; but when the results are obtained, there is great reward for the efforts expended.

In a wild state the peony family consists of some twenty-five distinct species. Baker's monograph of 1884 enumerates 22; that of R. Irwin Lynch in 1890 gives 25. The latter authority was of the opinion that our modern garden forms originated mostly from two of these species namely, *albiflora*, a native of Siberia, and the European *officinalis*; some few are traceable to *peregrina* a native of Southern Europe, two or three to *tenuifolia* a Russian species, and considerable influence is also attributed to two double forms imported from China — *Reevesi* and *Pottsi*. These last two are termed "hybrids of *Sinensis*" by Verdier of Paris who achieved prominence as a disseminator of new peonies about 1838. According to Mr. Paul the first raisers were M. Lemon *père* of the Porte St. Denis, Paris, 1824; M. Jacques, gardener to King Louis Philippe at Neuilly, 1824, whose collection passed on to his nephew M. Victor Verdier; and M. Guerin, Paris, 1837. M. Lemoine of Nancy and M. Keteleer of Paris were also prominent raisers of peonies from the beginning of their culture. Lemoine refers to the rich collection of the Prince de Salm Dyck at Soulange Bodin near Paris which he saw in 1842. A most distinguished French raiser was M. Calot of Douai who inherited the Comte de Cussy collection and continued the collection and production of seedlings to 1872 when the collection passed into the hands of M. Crousse of Nancy who did much to bring the standard up to the high mark our collections have now attained. M. Buyck the raiser of the celebrated Festiva Maxima and M. Parmentier of

Enghien were among the prominent workers on the peony in Belgium in the early days. In England little had been done with the peony up to 1850 when Salter began his collection. Kelway started hybridizing in 1864 and his energy and long-continued enterprise in raising and distributing improved forms have done much to popularize the peony. In 1884 Kelway catalogued 250 varieties; of these 63 were new single and 41 new double of their own raising. Their exhibit at the Royal Horticultural Society's Exhibition that year, according to Richard Dean, "greatly astonished old-fashioned gardeners who could look back to the time when only about twenty species and varieties were known in cultivation." Barr, Hooper, Paul, and others were also prominent among the English horticulturists who did good work on the peony.

In America, so far as I have been able to learn, there are but few names prominent as raisers of new varieties. Among the first of whom I find mention is that of H. A. Terry of Iowa. Mr. Terry writes me that he commenced growing peonies in 1858, getting his first stock, 30 varieties, from Prince of Flushing, which included Humei, Pottsi, Reevesi, Fragrans, Count of Paris, Festiva Maxima, Lutetiana, Edulis Superba, Plenissima Rosea, Queen Victoria, etc. Most of these produced seed freely and Mr. Terry soon had thousands of seedlings, but he says that generally not five in a thousand would be worth propagating and often not one. He has now a fine collection of some 200 choice varieties of his own raising. Mr. Terry is of the opinion that Festiva Maxima is still the best all round white, and for pink he thinks there is none much better than Plenissima Rosea. Grover Cleveland is his best dark crimson. Of fancy colored varieties he names Carrie, Esther, La Reine, Mrs. Pleas, Maude Hutchinson, Stephania, and Variegata.

"I am now in my 78th year," says Mr. Terry, "and do not know how long I shall continue to grow peonies, but I want to be surrounded with them as long as I live. They are like my children, very dear to me."

I have heard Morning Star one of his seedlings highly spoken of. It has light, delicate, outer petals and the inner ones radiate like star rays from the center. It is said to be a most lovely, fra-

grant, and winsome flower. His Mrs. Harrison is also a fine one with deep red outer petals and delicate pink center.

Mrs. Sarah E. Pleas of Indiana has also been an ardent worker for many years in raising new varieties. Her Golden Wedding variety is unique and beautiful.

Your own John Richardson was also a noted raiser of new varieties. I have no historical data concerning his work, but presume it must have been done during the 60's and 70's; the records of your society would tell. His variety Rubra Superba is considered by many to rank in its color with the celebrated Festiva Maxima. One of its most valuable characteristics from a commercial standpoint is its shipping and keeping qualities. A large shipper of peony blooms to the Chicago market, who handled last season over 300,000 peonies of the best varieties of the day, states that Rubra Superba is the best shipper and keeper of all. Richardson's Perfection, Dorchester, Grandiflora, and Norfolk are also very fine varieties. Hovey, Ellwanger, Peterson, Barry, Pentland, Thurlow, are also among the American names that should be added to the roll of honor as enthusiasts if not actual raisers of new varieties and there are doubtless others that I do not think of at the moment. Mr. Harrison and Mr. Rosenfield are doing splendid work in the West in popularizing the thoroughbred peony. All through the great West and Northwest the people are becoming enthusiasts and are finding the peony a much more satisfactory plant than the rose. Mr. Rosenfield of Nebraska has been quite successful in raising American seedlings. One of his best is Blushing Maid, a light blush, late and very fragrant.

Around Chicago quite a number of large peony plantations have been formed for the sale of the cut blooms alone and they are reported as profitable. The peony is a good keeper when cut at the proper stage in the bud, and they not only ship well long distances but can be kept in cold storage for weeks, and will open up beautifully when wanted, with the colors more perfect and delicate than if they had been allowed to open on the plant.

As to varieties, I am frequently asked the embarrassing question as to which are the best twenty-five or fifty out of the hundreds of fine new kinds in commerce. I have tried it, on a few occa-

sions, and each time I almost wished I had not. If, for instance, I should name Magnifica some one will ask, Which Magnifica? There are at least two of that name; and if I name Princess of Wales there are three of them, and so with many more. I used to make copious notes of the exhibits at your Boston shows including the grand collection of Mr. Thurlow. I have visited good collections when in flower and spent many delightful hours with note book in hand, and I have grown a few good ones myself.

For Massachusetts the early flowering kinds, *tenuifolia plena*, and the three colors of *officinalis* are indispensable as they flower in May and are welcome even if they are not large or fragrant. Among the June flowering I think I am fairly safe in mentioning the following:

Whites.— Duke of Wellington, Festiva Maxima, La Tulipe, La Vestale, Marie Lemoine, Duchess de Nemours, Neomie Demay, Alice Julvecourt, Grandiflora Nivea, Baroness Schroeder, Helene Leslie, Madame Dupont, Viscountess Folkestone, Triomphe de Paris.

Pinks. — Belle Douaissiene, Caroline Allain, Delicatissima, Duchess of Sutherland, Eugene Verdier, Faust, General Bedeau, Leonie, Madame Breon, Lady Bramwell, Madame de Vatry, Paganini, Princess May, Humei Carnea, Rosea Grandiflora, Alexandre Dumas, Glorie de Patrie, Josephine Parmentier, Reine des Fleurs, Washington.

Deep rose varieties. — Dr. Bretoneau, Abel de Pujol, Etendard du Grand Homme, John Fraser, Sir Charles Dilke.

Deep crimson varieties.—Rubra Superba, Marshall MacMahon, Souvenir d'Auguste Miellez, Francois Ortegal, Rubra Triumphans, Delachei, Louis Van Houtte.

The foregoing fifty are all medium-priced varieties that can be purchased from twenty-five cents to about $1.00 each. Many of the extra fine new ones have not been included on account of their high price. Very few ordinary planters care to pay $2.50, $3.50, or $5.00 a root for the very latest, most of them preferring to wait until the prices have become more reasonable before adding them to their collections.

In regard to the culture of the peony, I prefer to leave that to more experienced and competent hands than my own. In a

general way the details are known to all of you or can readily be found in your library. If I have been able to interest you in these rambling notes on this magnificent flower which is now commencing to again take its true place in our gardens, I am happy and hope you will immediately resolve to plant a worthy collection of the grand modern varieties.

Discussion.

Mrs. E. M. Gill asked if anything could be done in the culture of peonies tending towards increasing the erectness and firmness of the stem.

The Lecturer replied that some improvement in these respects could be made by culture, but that there were weak-growing and strong-growing varieties.

Dr. Horatio C. Meriam said that he was much interested in the subject of the lecture and in its literature and that the speaker had thrown much light upon it. Mr. Terry's work alluded to by the essayist is a good illustration of how much an isolated person can do without the advantages of exhibitions and opportunities for comparison. He thought Mr. Terry had named and introduced too many varieties and that few of his introductions were of real value. Concerning the propagation of the peony Dr. Meriam said he had recently heard of a method that promises to be helpful. This is to place over the plant in the spring a frame twelve or fifteen inches high, without bottom or top. This frame should be filled with good soil and the plant allowed to grow up through it. In the fall the frame will be found to be filled with roots which may be divided according to the number of eyes. If this method is reliable one of its advantages will be that valuable plants will not have to be lifted to propagate them. He intended to make a trial of this plan the coming season.

He found it a difficult matter to get plants true to name and that would remain true to color or retain the slight variation of shade that distinguished them when first introduced. The climate in America is trying to some of the European varieties. Here the sun is hard and drying, while in England it is tempered by cloud, fog and a soft atmosphere. In England they can grow

pansies from cuttings but he had never been able to carry along a good plant. He had learned years since that the pansies that succeeded best were from seeds obtained from the Continent with its more open sky, the plants being subjected to less changed conditions of growth. He had a large collection of *Iris pallida*. Two years ago it was rainy and dull at the time of flowering and the flowers were as beautiful as described in the catalogues; but last season it was hot and dry at the flowering season and they showed but slight variation; in fact, looked nearly all alike. With the beauty brought out by shadows we are familiar, and the English sky does this to a notable degree, so that it is not to be wondered at that we do not find all the beauty that the catalogues lead us to expect. Many new varieties are being introduced into England that will have no advantage in America over the older sorts, if given the same exposure and culture.

By far the most valuable work on peonies in America was that of John Richardson, alluded to by the essayist, and he produced varieties which at the time were not surpassed by any in the world.

Joseph S. Chase inquired as to the proper time for dividing old roots.

The Lecturer replied that it was done usually in September.

Mr. Chase stated that as a matter of experiment he began dividing them last year the 27th of July without noticing any disadvantage.

Mrs. Gill said the roots could be safely divided immediately after flowering.

Robert T. Jackson spoke of the life and work of John Richardson with whom he was intimately acquainted. His remarks suggested the desirability of putting on record a detailed account of Mr. Richardson's horticultural work. Such a paper has been prepared by Mr. Jackson and is included in the present number of the Transactions.

Hon. Aaron Low spoke of an old peony bush in the town of Essex, Massachusetts, which produced in profusion every year an old-fashioned flower. Countless plants had been taken from it and distributed throughout the surrounding country. It was thought to be more than a hundred years old.

The Lecturer stated that it was probably the old double-red *officinalis rubra* which was the common variety in old gardens and was known as far back as the time of Shakespeare.

Jacob W. Manning said that he knew John Richardson well and that he was noted for his spruce trees as well as for his peonies. He was an early planter of Norway spruces when they were but little known in this vicinity and had an ample garden of trees and shrubs in the late 40s. His varieties of peonies were shown at the exhibitions of this Society and can be found referred to in the Transactions.

Thomas Harrison asked if the peony was subject to any particular disease or insect injury.

The Lecturer replied that there appeared to be no disease affecting the peony and that it was "bug proof." The best location for the plant was on the borders of shrubbery, but it does well and looks well anywhere.

NOTES ON THE CULTIVATION OF PEONIES.

BY ROBERT TRACY JACKSON, CAMBRIDGE, MASS.

Presented for publication August 23, 1904.

Papers referred to are listed at the end of this paper and are indicated by number in the text. To those interested many brief notes or longer articles on peonies will be found in Garden and Forest, 1888 to 1897, The Garden, [London], and The Gardener's Chronicle, [London], besides other horticultural journals. Very comprehensive though brief articles on peonies by W. Watson (18) and by Paul (15) give much information in regard to the early history of peonies.

Herbaceous peonies are mostly of the easiest cultivation. Full sunshine, or at least a good exposure to the sun is necessary as they do not thrive in the shade as under trees. The roots of trees or large shrubs are objectionable, especially elms, maples and lilacs, as absorbing the nourishment and water needed for the full development of the peonies. A location protected from the force of the wind is desirable where possible. Peonies will stand great variation as regards soil, but a heavy rather than a light sandy soil suits them best. Being strong feeders and vigorous growers they should be given deep cultivation, eighteen inches to two feet, even more is recommended by some, but I have had good results with two feet. An abundance of barnyard manure should be worked well into the soil especially before planting. If this manuring can be done some months previously, so much the better. Cow manure is best when available. Peterson (2) says that where propagation is the feature desired peonies form more and better roots in light rather than heavy soil.

Where the soil is sandy an addition of clay would doubtless be an advantage. In a heavy clay, which is the condition in my garden, a free use of sifted coal ashes and leaf mold, dug into the soil works wonders in ameliorating and improving its tilth.

Coal ashes contain little potash and add practically nothing of chemical fertilizing ingredients to the soil and nearly the same may be said of leaf mold, but both improve its mechanical condition which is of the very first importance, for successful plant growth. Sand and road scrapings where available are of course excellent for lightening heavy soil; stress is laid on coal ashes simply because their value is not usually appreciated and in small gardens it is a convenient available material, usually a waste product to be gotten rid of. My attention was called to the value of coal ashes by our President, Dr. Henry P. Walcott, who has used it for many years in his garden. It is much used by English and Scotch gardeners for clay soil. In the autumn cleaning of the streets in Cambridge the city carts collect great quantities of leaves which they are very glad to dump on the grounds of willing citizens. These in a single year, by turning once, make a fine, well decomposed leaf mold ready to dig into the garden, and give room for a new lot of leaves.

It is emphatically best to plant peonies in the fall. In the spring they may be transplanted if necessary; but it is undesirable to purchase stock at that time. Frequently plants purchased in spring will not appear above ground the first year, as may happen with excellent stock coming from a distance, also in spring there is more chance of the death of some plants than with fall planting. If plants are received in autumn too late for fall planting, as is sometimes the case in importing, or if they are in questionable condition, if small enough, it is best to pot them and plunge the pots in a cold frame for the winter. In spring they can then be planted out without disturbing what roots they have made.

Peonies may be left in the ground without transplanting some eight or ten years, but longer is undesirable if best results are to be attained. It is sometimes stated that peonies may be left in the ground almost indefinitely but this is a mistake if good results are expected. Miller says (14) "When you have a peony well established you should not disturb it for the next twenty years. A peony hates division of the roots worse than poison." These statements are extravagant, inaccurate and misleading, as are many others in his paper. The finest flowers are to be had on

moderate sized, well grown plants. If plants are left too long in the ground they sometimes die out in the centre.

For purposes of propagation plants may be advantageously taken up more frequently, every two or three years, divided with a large sharp knife (a small carving knife is very good), so as to leave at least one bud with a portion of the root. Peony roots are stiff and unyielding as well as brittle, so that they are very apt to be broken seriously in dividing. Harrison (6) says "Let them lie in the shade a few hours and wilt. This toughens them and does not hurt them a particle. You can immediately restore them to their plumpness by putting them in wet moss, or keeping in or planting in moist earth. This is very important." I have tried Harrison's method this fall, only I left them out of ground for several days in cool weather. When the roots become somewhat flaccid and yielding instead of rigid and brittle, they can then be easily divided without injury, even to solid old clumps. They will regain their original plumpness in a few hours exposure in a damp medium. Harrison has made an important contribution to the details of peony propagation by this communication.

The small plants after division may be set out in nursery rows, two feet apart, the plants being about twelve to eighteen inches apart in the row, according to size. In cutting up, some roots will be broken off and these may be planted with the rest as more or less will grow from adventitious buds starting under these conditions. Actual observations of what proportion will grow from adventitious buds would be desirable, but do not exist as far as I am aware. Harrison says (6) ".... if a root is broken at the centre, the lower portion can never form a head .... The upper portion of the same root where it breaks from the plant will have a good show for forming a head." He also says "I have often planted buds alone, with no root whatever. One fall I put in thirty, and the next year had twenty-seven fine plants." In propagating if the plants are choice, and are cut very fine it is desirable to set a frame over them the first winter. As Peterson (2) says herbaceous peonies of choice varieties may be propagated by grafting. This method is practised to some extent; but I think is most undesirable for herbaceous plants. Grafting is not expected in such plants and if practised endless

confusion in varieties may occur from the growth of adventitious buds from the stock. If this is done they should be grafted on *officinalis* stock or some other distinct species, so that shoots from the stock, which are likely to develop, will be strikingly distinct from those developed by the scion.

F. L. Temple in 1889 (16) suggested the method of propagating herbaceous peonies by heaping up fine rich soil over the crowns; under such conditions he found, by an accidental experiment, that roots and buds developed on the stems, which could then be cut off leaving the crown intact. Timme (17) in a recent paper recommends this method of deep burial as a means of propagation. According to him the procedure is as follows. In spring before there is any growth above ground a bottomless box or tub is placed over the plant and filled with nice porous soil to a depth of twelve or fifteen inches. The new growth will push through this layer of earth developing its foliage and flowers above it. By keeping this soil enclosed in the box fairly moist all summer it will be filled with roots about October. The stalks are carefully cut away below the new stratum of soil and cut into as many pieces as there are eyes provided with roots. These short lengths planted to a depth of about two inches below the surface will grow into fine stock in less time than will small root divisions. Timme says that this sort of layering succeeds well with nearly all herbaceous peonies.

Mallett (12, 13) in England also recommends this method of propagation as he says (12) "....cover the stools with eight inches of light soil made firm; growths will push through this in spring readily enough and will flower well, but in September the resting buds will be found on independent stems six inches long and with a mass of roots at their bases. These should be detached and planted forthwith, and the old soil cleared from the stools to admit warmth, when they will develop many buds hitherto latent, and which they always have in reserve. These will flower in the course of the season.... The flowering strength of the stools is but little impaired, but a vigorous thinning of several weakly growths may be necessary in the second season." (13) "Strong double peonies will often form three or four resting buds on one rooting axis. These may be removed individually with a por-

tion of the stem and its roots attached, potted, and grown on in a little warmth till planting time to encourage further root action." If this method proves as satisfactory as has been expressed, it may well be a most important means of propagating peonies. As Temple (16) suggested it would probably be best to fill in the earth gradually rather than the whole depth at the start, but this is a matter for determination. Leaf mold being fine, light, and retentive of moisture, would it seems be good material for covering.

In starting new beds or plantations it is safest to plant peonies where they have not been recently grown, as bits of roots may have been overlooked in digging up the plants, and such growing make confusion with varieties. If they are to be planted back in the same soil greatest care should be taken not to leave any roots behind when digging them up, but such care is never beyond the limit of possible oversight. Of course any given variety can be replanted in the same situation without risk of mixtures.

Peonies may be transplanted or dug up for division to best advantage late in August or in September, rather than in October or November, as the roots then have a chance to become established before cold weather. The crowns may be set about three inches below the surface, deeper planting is undesirable. For permanent planting peonies should be set three feet apart, or if there is plenty of room four feet is none too much. If set closer it will be difficult to get between the plants without injuring the blossoms. If plants are small when set out, interspaces may be utilized for Gladioli or any plants that will not cast appreciable shade or otherwise interfere with the peonies. Such plants had best be annuals, or of an annual character, as perennials would interfere with a free cultivation of the soil. In digging use a fork, not a spade, as less injurious to the roots of the peonies.

For a limited number of peonies scattered planting is desirable, as allowing for the full development of each individual plant without loss of space. When grown close together the blossoms during a heavy rain or wind are apt to be beaten down and entangled with the flowers and foliage of adjacent plants. Where considerable quantities are grown beds are doubtless best, thus having all together, a convenience in watering and other cultural treatment, also the effect of mass in a bed is very fine.

Plants should be set three feet apart each way in a bed, or better four feet between rows if there is room to spare. Never having had this luxury of space I can affirm that three feet will do very well. Beds six or nine feet wide and of any convenient length cut in grass (Fig. 1) and carrying two or three rows of peonies respectively are very attractive and easily gotten at for handling or inspection. Such beds are good for roses, phloxes, irises, or vegetables, which may be grown in rotation with peonies when they have to be taken up. Beds of this character are used extensively in the Botanic Garden of Harvard University in Cambridge, and also in the large garden of a skilful lady hor-

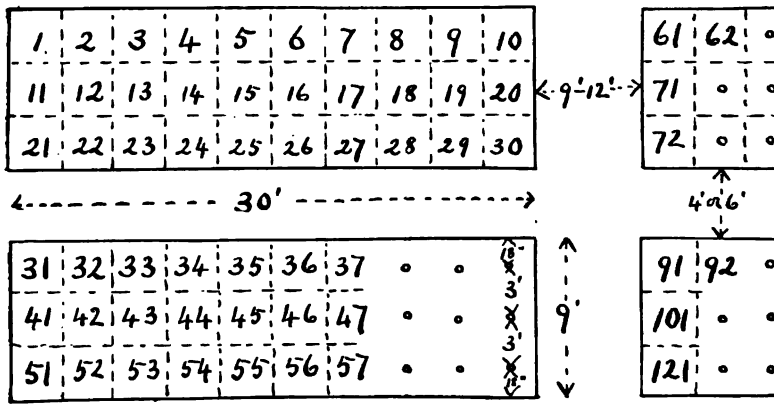

FIG. 1.—Plan of beds cut in grass; plants three feet apart.

ticulturist in Newport, where very best results and effects are attained. Large square beds with grass paths are used by Dr. Charles Sedgwick Minot, of Readville, in a large part of his extensive collection of some four hundred and fifty choice peonies, including two hundred and thirty-eight varieties. Such beds may be made of any convenient size, but beds for fifty or one hundred plants (Fig. 2), have certain advantages on account of the ease of keeping track of such numbers. An obvious advantage of such a system as shown in Fig. 1 or 2, is the ease of maintaining lists of plants in stock. Dr. Minot's plan, as in those here shown, is practically like the plan of a concert hall, where each seat, whether

occupied or not bears its own number. With a book or card catalogue of the plants a pencil number on the left hand side readily shows just where and how many plants one has of a given variety.

A peony well grown, or the same variety grown poorly or with average culture are very different. Unless really well grown one does not know what are the possibilities of this fine flower. Disbudding distinctly improves the quality of remaining flowers, especially on the larger varieties. In some varieties however where profusion of bloom is a feature they may be left to advantage. As stated by Mr. A. H. Fewkes (5) in an excellent article on peony culture, the lateral buds should be removed as soon as they are large enough to handle, so as to throw all the strength into the leading bud. As he also says, proximity to a hose is an important feature when possible in planning the position of a peony bed. for the free use of water in the growing season is a great aid in producing fine flowers. Liquid cow manure, or other liquid manure used during the growing season promotes a splendid vigorous growth and correspondingly superior flowers. Water from a cesspool is excellent; "tea," as a lady friend who has a sense of humor and an eye for a peony calls it. Sheep manure or other fine manure stirred into the soil about the peonies in spring works well, being washed down to the roots by rain or watering. In the late fall it is desirable to put four or five inches of barnyard manure above the crown of each plant. This may be done after the tops are cut off and the ground freezes hard; the manure being dug in in spring.

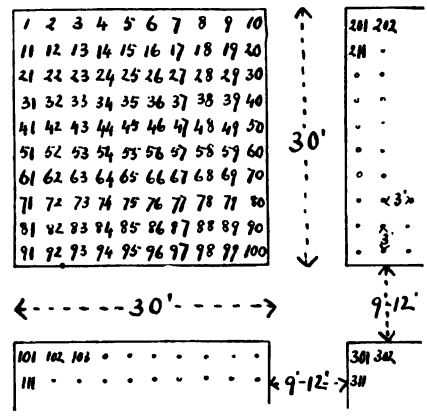

FIG. 2.—Plan of beds, each holding 100 plants three feet apart, or three feet apart in the row with four feet between rows.

Delicate colored peonies lose their color more or less in strong

sunshine, so that for very best results they may be shaded to advantage. By shading I have retained delicate shaded pinks in flowers, which were entirely lost in flowers of the same variety grown a few feet away, but not shaded. Of course opening flowers in the house has the same effect as shading, saving the delicate colors, and some of the finest blooms one sees are flowers thus opened off the plant.

Peonies have a great mass of petals, at least the double ones, so that when picked there is a large surface for loss of water. Such being the fact it is important that they be put into water as quickly as possible after cutting. The best method is to carry a pail or can of water into the garden and put the flowers instantly into water, not even waiting to cut a second bloom. Experiment has demonstrated that flowers thus instantly put into water will outlast flowers kept even a few minutes without water. This is especially important for flowers that are to be exhibited, or shipped to a distance. When a peony is on the plant there is a continuous flow of sap to the flower. On cutting, this flow being shut off, from the suction thereby inaugurated it is quite probable that air particles are sucked in. If this is true, such air particles would tend to obstruct the vessels, interfering with the succeeding flow of water. This view is suggested to me by Dr. J. L. Goodale, as he says, in surgery one of the most important details is to prevent air or other foreign matter being sucked into the veins when they are cut, thus causing occlusions. If cut peonies are to be shipped they had best be kept ten or twelve hours in water in a cool place, when they become surcharged with water and travel vastly better than fresh cut blooms. The same principles as regards cutting doubtless would apply to most other flowers as well.

Some method of keeping track of the names of peonies is a necessity to any careful gardener. When planted in rows or widely scattered, lists may suffice, but the best method is good labels, if supplemented by a list so much the better. Ordinary wooden labels six inches or even a foot long are practically worthless, being soon lost by decay or broken by garden operations. Heavy wooden labels, white pine, cypress or cedar, eighteen inches to two feet long, of seven-eighths inch stock,

with the ends dipped in tar, or well soaked in linseed oil, then painted on both sides, reserving a space for writing, and the name painted or written on them, are excellent, but expensive and conspicuous.

A label that is cheaper, simpler to prepare and less conspicuous as far as that feature may be desired, is a zinc label attached to an iron rod (Fig. 3). Such labels I have used for over twenty years with entire satisfaction. It is practically the same as that described by me some years since (8). As some improvements in details have been made I will describe the label here in full. The rods to which the labels are attached are two feet long, made of heavy wire one quarter of an inch in diameter; an eyelet is bent in the top and the rod galvanized after the eyelet is bent. This is an important point as galvanizing seals the opening of the eyelet. Such label rods are made to order for five dollars a hundred by wire workers in Boston. Shorter or lighter rods are less desirable as they do not go into the ground far enough to have a good hold, or are liable to be bent in gardening operations. Rods with an end flattened and an eyelet punched in it as sometimes sold are undesirable, being so sharp as to be dangerous in a garden. They are also too short and are not of sufficiently heavy stock. Zinc labels are kept in stock of various sizes to suit customers. I have preferred the English labels, number 21, measuring four inches long and one and one fourth inches wide, with two holes punched in one end (Fig. 3). They are large enough for any names, which smaller labels are not, and yet they are not conspicuously large. These labels are carried by a Boston seedman.

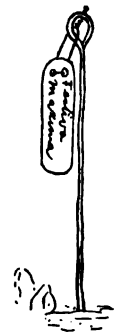

FIG. 3.— Zinc label with rod.

Fresh clean zinc may be written on with chloride of copper, or chloride of platinum ink, which makes a strong black mark. As some trouble has occurred from effacement of the writing ink from corrosion of the zinc, the following method was adopted which is most satisfactory. New labels are oxidized by exposure; practically they are simply thrown on the ground in some out of the way place and left for a month or two. When the

surface is roughened slightly by oxidation they are ready for use. Rub a little rather thick oil paint on the label with a rag, then write with a soft lead pencil while the paint is fresh. Such a label I have used for over fifteen years and it is almost imperishable if kept above the manure about plants, which will corrode the zinc badly. The label is attached to the rod by copper wire, which is vastly superior to galvanized wire, as the latter soon rusts and drops off, or at least soils the label. It is claimed that there is galvanic action between the copper and zinc, but after long experience I am confident that this is an error under open air conditions. In the moist air of a greenhouse such galvanic action may take place. Aluminum wire for attaching labels would probably be excellent. At the Arnold Arboretum zinc labels have been nearly worn through by the attaching wire in a short time; but there they are in trees well up from the ground and the wearing away is evidently mechanical from wind action.

To clean old zinc labels for use again they may be soaked in xylol (probably also in many other chemicals), which softens the paint, then scraped off with a knife and sand paper. The label has to be oxidized again by exposure before it is ready for use. Small unpainted wooden or paper labels for plants often have the name printed on them with rubber type, which is set up in a holder and is very convenient. The aniline rubber stamp ink used however is most objectionable, as it fades out entirely in a very short time. An absolutely permanent ink may be made as follows: To three parts of glycerine add gradually one part (by bulk, not weight) of a high grade of lamp black. Grind in a mortar until of the consistency of rather thick syrup. Spread on a thick felt pad, which is used for inking the type in the usual fashion. The pad for convenience may be kept in a tin box with a cover to exclude dust. This ink, described in 1898 (9), I devised for museum labels and it stands weather, water and alcohol with impunity.

In order to maintain satisfactory lists of plants in a garden, some sort of a plan of the garden is necessary. The plan may consist of plans of beds as in Figs. 1–2, or may consist of a plan of the garden as a whole. A very convenient and simple plan is one devised by my father, the late Dr. J. B. S. Jackson, and

which I published in the Transactions of the Society for 1884 (7). The plan is to number the fence posts in one direction as east to west, and letter those at right angles as from south to north. This forms a sort of latitude and longitude by which a plant may be located in one's catalogue or lists. A given peony in my card catalogue bears in pencil on the left, "C 1, J. 6, M. 4," which tells how many plants I have, and a close approximation to their position in the garden. The pencil mark is easily changed if plants are moved. If fence posts exceed in number the letters of the alphabet, additional letters may be taken from distinctive letters of the Greek alphabet, or a modification of the Roman alphabet as AA, AB, AC, etc. Roman numerals are inconvenient for such use as being more to write, harder to read, and easier to make errors with.

A garden catalogue or lists are best written with Higgin's waterproof drawing ink which stands prolonged soaking without injury and cannot fade. In a recent experiment I soaked writing with this ink for eight weeks, immersed in water, without affecting the ink. This withstanding water with impunity is very desirable, as it is extremely annoying to have the ink of one's catalogue blurred, or even obliterated, by a splash of water, which with most inks occurs so easily from rain or otherwise when working over lists in the garden. This ink or a similar high grade carbon ink is also valuable for transient paper labels used in hybridizing, etc., and for shipping directions, or labels for exhibitions. On our exhibition tables the labels of peonies and other flowers, or potted plants, are frequently defaced or even obliterated from accidental wetting, which so easily happens under such conditions, and is absolutely prevented if a suitable ink is used.

Unless supported in some way the larger, heavier peonies are apt to be beaten down when in bloom by wind and rain and seriously injured. To obviate this difficulty some form of support is highly desirable. When planted in rows stakes may be driven into the ground at intervals, with a connecting wire run along the top; cross wires or light sticks secured to the connecting wires between plants are a material help. Another method, and one used by the late Mr. John Richardson, is to drive down

two or three stakes around each plant, connecting them by a stiff wire stapled to the top of the stakes. Barrel hoops attached to stakes make very good supports, but are limited in size and are rather conspicuous. A most satisfactory support, the best I have seen, devised by W. C. Egan (4), with slight modifications of his description is made as follows (Fig. 4). Three iron rods three feet long, are made of heavy wire one quarter of an inch in diameter, an eyelet is bent in the top, and the rods are galvanized after they are cut and bent. A circular connecting wire of lighter weight, one eighth of an inch in diameter and six feet six inches long, is passed through the eyelets and made secure by looping the free ends over the wire in such a manner that they will slip on the wire as shown in Fig. 4. Thus one can have the circular wire of full size, or reduced to any smaller diameter desired, and held in the reduced size by tying one end. Such supports are very inconspicuous, being practically invisible in a well grown plant, and have given satisfaction to several peony growers who have tried them. They are made by a Boston wire-working firm for three dollars a dozen. The supports as described by Mr. Egan are made of heavier wire, three-eighths inch in diameter, which seems unnecessarily heavy, and legs two and one-half feet long, which are too short for my peonies.

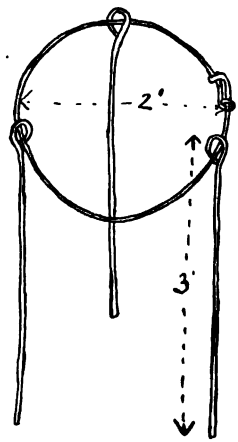

FIG. 4.—Egan's Peony Support.

According to Baker (1) in his revision of the species there are about two dozen species of peonies. He lists twenty-two species with their synonyms. Lynch (11) lists and describes twenty-five species and figures the foliage of many of the species. Excepting *P. tenuifolia* and perhaps *P. Wittmanniana* (which is somewhat difficult to grow and I have not seen the blooms), most of the species are said to be not striking as garden flowers, and are of interest principally to the collector. They might of course be of value in hybridizing, to break the blood of cultivated forms.

The earliest peony to bloom is *Pæonia tenuifolia*, both the single and double forms, which appear in May. The flowers though small, are of brilliant coloring, and well worth growing. Next in succession comes *Pæonia officinalis* var. *rubra*, the old-fashioned double red peony of our grandmother's garden. Its superb color, freedom of bloom and large size when well grown render it one of the best of peonies and indispensable in a garden. *Pæonia officinalis* var. *rosea*, a fine nearly cherry red variety of much merit, and var. *alba* which is a delicate pink on opening, changing to white before fading, are important additions, both as being good peonies, and as coming early and therefore extending the season of bloom. Other varieties of *officinalis* are listed in foreign catalogues, but I have not seen them.

Tree peonies, or *P. moutan* varieties, come with the *officinalis* and extend over to the season of the Chinese peonies. *Pæonia moutan*, according to authorities (Lynch (11)), is not known in the wild state, being known only in cultivation, first in China and Japan, where it has been grown for a very long period of time. Professor Charles S. Sargent writes me that he does not know of it in the wild state, but believes that it will sooner or later turn up. It is a somewhat remarkable fact that a large growing shrubby species, and the only shrubby species of the genus, should be known only as a cultivated plant. Tree peonies are not as easy to grow as herbaceous peonies, are less hardy and more difficult to propagate, also it is not as easy to get really choice varieties. As far as known, all the Tree Peonies in the market are grafted on *moutan*, *albiflora* or *officinalis* stock. Auguste Dessert (3) claims that they do best grown on *moutan* stock, although it is difficult to get roots of this stock large enough. He says that they use *Sinensis* [a variety of *albiflora*] stock and cut scions with two or more eyes and so disposed that at least one eye is beneath the surface of the ground; this eye greatly encourages the formation of roots in the graft. Kelway (10) gives interesting notes on raising *moutan* seedlings and in regard to grafting says: "First procure a sufficient quantity of tubers of *P. Sinensis*; cut these into lengths of about six inches; then take grafts from the sorts you wish to increase and insert these into the upper end of the tuber in the ordinary way of

cleft-grafting, tie securely and cover the junction with grafting wax so as to exclude the air. These should now be potted into five-inch pots, using a rich compost; the pots should be plunged into frames unheated; give a good watering, and cover the frames with a thin mat to partially exclude light. In the winter they should have an extra mat to protect them from severe frost. The best time to perform this operation is in the months of August and September." Tree Peonies do well on *officinalis* stock as I know from experience. The Japanese I believe graft on *moutan* stock alone; but one difficulty with that is that shoots from the stock cannot be distinguished from shoots from the scion until blooming, whereas shoots from *albiflora* or *officinalis* stock are detected at once. Layering as suggested by some writers, though slow, would doubtless yield most satisfactory plants.

The Chinese peonies of the *Pæonia albiflora* stock come next in season of bloom. The varieties as known appear to be the results of variation of the stock, hybridization, or the crossing with other species, having entered in very little if at all, as far as one can judge from the character of the foliage. They are in bloom about the first of June for the earlier varieties and extend into July for the last blooms of the later varieties. The single varieties are usually amongst the earliest to bloom, but some double varieties are nearly as early. In the past two years the early Richardson seedling, George B. Sowerby, has been in full bloom on the fourth of June. The latest of the choice seedlings raised by Mr. John Richardson, named Milton Hill, this year had secondary blooms still left in July. We may therefore by selection, starting with *Pæonia tenuifolia*, get about six weeks or a little more of flowering season for peonies. It would be desirable for dealers in peonies in their catalogues to give more explicit statements of season of bloom, especially the earliest and latest varieties as an aid to purchasers.

In considering the qualities of a peony, color and form are of the first importance. Freedom of bloom is also an important feature, for some varieties while of good form and color are such shy bloomers that they are from this quality not desirable for the general cultivator with few varieties. Extra freedom of bloom on the other hand is a feature especially desirable. One other

point of much importance is strength of stem. Many fine peonies have such weak stems that they flop over hopelessly from their own weight, others stand erect, thereby developing their flowers much better and showing off to infinitely greater advantage in the garden. Lasting qualities is a feature of importance, especially to the dealer in cut blooms.

Seedlings of *Pæonia albiflora* varieties require four to six years to bloom. The seed should be planted as soon as ripe in rich mellow soil, if protected by frames so much the better. They are best left without disturbance until blooming, but if planted too thick, will have to be transplanted. Very double flowers rarely set seed, yet an occasional capsule will develop on an otherwise sterile plant. Harrison (6) says that: "Seedlings will often bloom single for years and then turn double." I have never seen such a case. Doubtless seedlings may improve in size and quality with age, but as far as my experience has gone the first bloom, if strong, is a very close indication of what may be expected as the permanent character of a seedling.

It would be highly desirable for peony dealers to insert in their catalogues after the names of varieties the name of the originator. It is only fair credit, and adds much to the interest in these and other plants to know something of their history, who raised them and when. This is done somewhat, but rarely systematically as it should be. Messrs. W. A. Peterson of Chicago, and C. W. Ward, of the Cottage Gardens, Long Island, in their catalogues for 1904, note the originators of peonies very fully, also the Lemoines of Nancy, France, do the same, though not as fully, on the other hand, the Kelways, of Langport, England, list their own seedlings, but ignore the names of other growers.

The American Peony Society is studying the nomenclature and seeking to ascertain as far as possible when and by whom each variety was raised. The results of their inquiries are looked forward to with interest. Professor John Craig of the Horticultural department of Cornell University, at Ithaca, New York, in conjunction with the American Peony Society, is attempting to collect and grow all the known varieties of herbaceous peonies. By this means the synonymy can be straightened and the really best varieties ascertained. He has already gathered over six

hundred varieties, which are to be grown in a fine piece of land well adapted for peony culture. Such experiments are of a high degree of value and interest, carried on by recognized experts, under auspices of an impersonal character, and where they can receive the benefit of a critical study best found in such a horticultural centre. Similar studies of other groups of cultivated plants it is believed would be productive of much good.

Another thing that might well be done by the American Peony Society, or by a horticultural society, or journal, is to prepare and publish a bibliography of the literature of the peony, including references to published figures of species and varieties. Such a bibliography could, to advantage, be annotated by the editor. Many short but important articles are apt to be overlooked, and a cultivator wishing to see a figure of a given variety, or species, may have a long search before finding it, or may take the trouble without reward, because no published figure may exist. Bibliographies of special topics are an important feature in scientific subjects, and it seems that no more important matter could be taken up for the advancement of horticulture than lists of published papers, or larger works, on our more important cultivated plants.

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John Richardson

JOHN RICHARDSON: HIS HOUSE AND GARDEN.

BY ROBERT TRACY JACKSON, CAMBRIDGE, MASS.

Presented for publication, October, 1904.

Having been requested to prepare a notice of my friend the late Mr. John Richardson, and his garden, for the Transactions of the Society, I undertook the writing with pleasure, as it seemed that some adequate description should go on record of this remarkable man, his interesting house and garden, all now a memory only, for their material presence is a thing of the past. He was a rare old man, it was a rare old house, and a rare old garden, and it was my privilege to know them intimately.

The Olivers who in colonial times built and lived in the old Richardson, or Everett house, as it is usually called, were intimately associated with the owners of many famous old houses in Cambridge and Medford, so that some account of these houses and their owners is also given.

I would express my warm thanks to kind friends who have given me information, especially Mrs. Alonzo Prouty, a relative of Mr. Richardson's; Mrs. C. R. Howard; and Henry M. Spelman, Esq., of Cambridge, who sought in the Registry of Deeds for facts in regard to the Lowell and other lands. A list of obituary notices of Mr. Richardson, and references made use of, is given at the end of this paper.

Mr. Richardson and His Family.

The late Mr. John Richardson, well known as a skilful horticulturist, and especially known for the choice seedling peonies that he raised, was born in Boston the 19th of February 1798, and died in Dorchester the 22nd of September 1887, in the ninetieth year of his age. He was a "remarkable man, ... whether we consider the versatility of his gifts, his extensive reading and wonderful memory, the unusual refinement of his

nature and tastes, or the uprightness of his character and the purity of his life." (Obituary notice, 3). Simple, without ostentation, he was a man of marked individuality of character, vivacious, original, of quaint personality, a gentleman of the old school in the best sense of the word; beloved by his intimates, respected by all. He left a lasting impression on those who knew him. He was very generous to charities, as attested by those who had good reason to know. One day he greeted his pastor's daughter with the words: — "I saw you coming, so brought down my purse to save the trouble of going up for it."

The accompanying portrait is from a daguerreotype taken in Dorchester, the 25th of September 1851, he being then in his fifty-fourth year. The signature, however, is from a manuscript signature written in 1887, a few months before his death. For the loan of the daguerreotype reproduced, also for access to the interesting old account books and brief diary of Mr. George Richardson, running from 1819 for some twenty-five years, and for many facts in regard to Mr. John Richardson, I am indebted to his relative, Mrs. Alonzo Prouty, who was an inmate of his household for some seventeen years.

John Richardson was of the sixth generation descended from Thomas Richardson, one of three brothers who came over from England about 1635. This branch of the family lived successively in Charlestown, Woburn and Lancaster, in that portion of the town which later became part of the town of Princeton. (Vinton). John Richardson, the youngest of several children, was the son of William and Susannah Richardson, his mother's maiden name being Susannah Walker.[1] The children were, Thomas B., settled in Tiffin, Ohio, and died at the age of eighty; Nicholas Boylston, a merchant in Hayti; William, settled in Richmond, Virginia, and died at about seventy years of age; Susan Boylston, born about 1785, died 3 August 1832, aged

[1] William Richardson Jr. (son of Wm. and Esther (Joslin) Richardson) married Susannah Walker, 12 Nov. 1779. (Vital records of Princeton). Vinton says (p. 617), that William's wife was a Miles. This, Mrs. Prouty assures me, is an error. There was a lady, Mary Miles, who lived with the Richardsons, and was called Aunt Miles, though not a near relative, which perhaps, gave rise to the error; she is buried in the family lot at Forest Hills cemetery. There is no evidence for two wives.

forty-seven; Dudley, born about 1789, died 3 Nov. 1808, aged nineteen; George, born about 1796, died 16 May 1861, aged sixty-five; and John, born 1798 (from Vinton, combined with records from monument at Forest Hills cemetery, and Suffolk deeds). William Richardson, the father, came from Princeton, Mass., and was a dry goods merchant, making a special feature of silk. He lived and had his store at 65 Cornhill, on the south corner of Williams Court, colloquially known now as Pi, or Pie Alley (Figs. 5, 6). The name Cornhill was retained until 1824, when it with other parts of the same street received the name of Washington street. William Richardson appears at this location, 65 Cornhill, in conjunction with Dudley Walker, in the Boston Directories of 1796 and 1798; in directories of 1800–1816 he appears at the same location by himself, and in 1818 his son Nicholas appears at the same location and in the same business. As shown by probate records Nicholas was a partner of his father's before the latter's death. Later he went to Hayti, as above stated.

This old locality is interesting as a part of old Boston as well as the birthplace and early home of Mr. John Richardson, so that records of the sales are introduced here. They were kindly supplied to me by Mr. Spelman. Joseph Ford of Boston sold to William Richardson and Dudley Walker, merchants, both of Boston, the estate No. 65 Cornhill, 26 August 1796. (Suffolk Records, Book 184, p. 117). A sketch of the land as described in the deed is given in Fig. 6. There was a brick house on the premises and the consideration was $7,000. Dudley Walker sold his half to William Richardson, 19 April 1800 (Book 197, p. 260). William Richardson sold to Gardiner Greene, of Boston, gentleman, on 19 December 1806, consideration $20,000 (Book 197, p. 260). Gardiner Greene reconveyed to Richardson on 17 February 1809. William Richardson died intestate 1 December 1815. His inventory includes a mansion house, $15,000. His heirs are not named in the probate records, but on 22 December 1819, Thomas B., William, George, Susan B., John and Nicholas B. Richardson convey to Samuel Fales (Book 266, p. 153), reciting that they are heirs at law of William Richardson, deceased. In that deed the passageway is called Williams Court; the Winthrop

FIG. 5.— From Bonner's map of Boston in 1722. "A. The Old Church, 1630" = site of the present Roger's Building. "C. Old South [Church], 1660." "E. Ch[urc]h of England, 1688," = King's Chapel. "K. French [Church], 1716." "a. Town House" = Old State House. "b. Governor's House." "Bishop's A[lley]" = Hawley St. since 1800. "Common St. [after 1836, and] Treamont St" = Tremont St. "Coopers A[lley since 1829 and] Mackrell L[ane]" since 1769 = Kilby St. "Hillierss L[ane]" = Brattle St. since 1820. "King St." = State St. since 1784. "Leverett L[ane]" = Congress St. since 1800. "Marlbrough St. [and] Cornhill" = Washington St since 1824. "Pudding L[ane]" = Devonshire St. since 1784. "Queen St." = Court St. since 1784. "Rawsons L[ane]" = Bromfield St. since 1829. Savages Court, after 1789 Williams Court, now colloquially known as Pi, or Pie Alley. The entrance archway to Williams Court from Cornhill, since 1732 has been called Webster's arch and lies above the letter h, in the word Cornhill. (Change of names from Nomenclature of Streets, City of Boston, 1879. Compare Figs. 6–7.)

land is owned by Andrew Brimmer and the Webster land, by William Thurston. The Richardson estate is now Nos. 241 and 243 Washington Street and No. 2 Williams Court. A sketch, Fig. 7 shows the present owners of the Richardson and adjacent land for comparison with the sketch of 1796.

"William Richardson's mother was of the French family of Joslin (originally spelled Jousselin) and from his French ancestry, John Richardson doubtless derived that vivacity which was

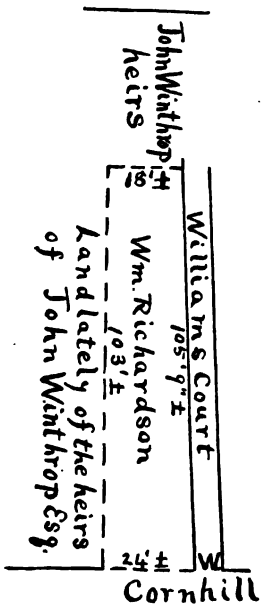

FIG. 6.— Plan and location of the William Richardson lot in 1796. Here John Richardson was born in 1798, compare with Fig 5.

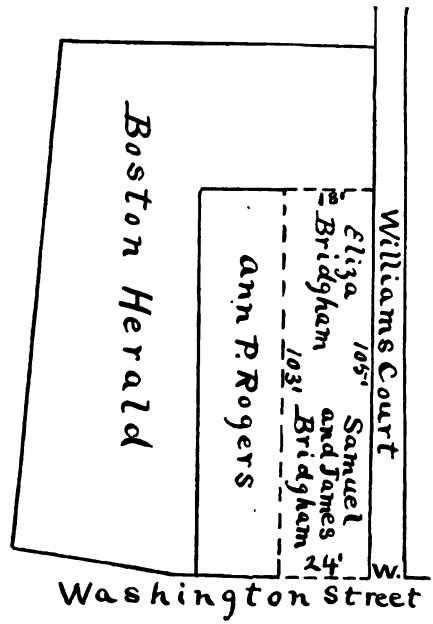

FIG. 7.— Present plan and ownership of the same land, 1904.
W. in both figs. is Webster's arch, the entrance archway to Williams court. The archway is seen in Fig. 5 above the letter h, in the word Cornhill.

one of his distinguishing characteristics. John Richardson's maternal grandmother was Susanna Boylston, daughter of Dudley Boylston of Brookline, Mass." (Obituary, 3). She was a member of the family of that name who held such a prominent position from their abilities and public bequests.

John Richardson passed his childhood and youthful days in Boston and retained a vivid impression of what it was then as a comparatively small town. He often spoke of the fine old garden of Gardiner Greene on Pemberton Square. From this garden, which was famous in its day, was transplanted the Gingko tree that is now growing on Boston Common, opposite Joy Street. In boyhood he was educated by the father of John Howard Payne, the author of "Home, Sweet Home," who kept a select school in Boston. (Obituary, 4). In his reminiscent talks he told of going to the Old Brick Church (Fig. 5) which stood on the site of the present Rogers Building, and relieving the tedium of the service by watching the pigeons on near by roofs. The pigeons and the State House are all that is visibly left of his boyhood days in that locality.

After the death of their mother in 1814 and father in 1815,[1] John with his brother George and their sister, Susan Boylston Richardson, moved from Boston in 1819 to the old Everett Mansion in Dorchester. They hired it of Mrs. Oliver Everett, widow of the Reverend Oliver Everett. In Mr. George Richardson's account book occurs this entry under 7 April 1819. "Paid Mrs. Everett one quarter's rent in advance $62.50." Similar entries occur at later dates until on 1 October 1833, we find the entry, "Bought the Everett estate in Dorchester."

Dorchester was real country when the Richardsons went there in 1819, and even in my own early recollection, pastures, farms and gardens were the rule. In his early Dorchester days, public conveyance to Boston was by a coach that ran from Boston to Milton once a day, Sundays excepted, leaving Elm Street, Boston, at five o'clock in the afternoon, and arriving at the same place at ten o'clock in the morning. (Boston Directory, 1820, p. 19). Now there is an electric car probably every three or five minutes, either passing the site of his house or not far off.

Mr. John Richardson was delicate from a child, never devoted himself to business and never married. His brother George, with their cousin William Richardson, was engaged in the West India trade and amassed a substantial fortune. Their business

[1] Dates from gravestones in Forest Hills cemetery.

THE RICHARDSON (EVERETT) HOUSE BUILT BY ROBERT OLIVER IN 1745, VIEW FROM THE SOUTHWEST.

house was on Rowe's Wharf, Boston. Another brother, Nicholas, formed the Haytien end of the firm. Relieved of business cares Mr. Richardson devoted himself to music and horticulture. He was accustomed to practice on the piano six or eight hours a day, and was said to be a remarkable musician with a fine ear and touch. A good deal of manuscript music exists written in his careful painstaking hand, and for a number of years he gave music lessons. His affection for his brother George was unbounded, and when the latter died, in 1861,[1] Mr. Richardson closed the piano and never played on it afterward, nor allowed it to be opened. His affection for his brother was shown in a number of characteristic ways. George's studio was in the top story of the house, seen in Pl. 5 (the right hand window), commanding a view of Dorchester Bay, and lined with the pictures that he had painted. Some of his pictures, as noted, are seen in the sitting room and parlor (Pls. 6 and 7). His studio was kept locked and left untouched after his death, and the wood he had brought up shortly before his death was left by the stove for twenty-six years. To be taken to this room was a mark of highest regard that Mr. Richardson could show to a friend. It was indeed sacred to him.

It was my privilege to know Mr. John Richardson intimately from my early childhood. Being an old friend and neighbor of my father's, the late Dr. J. B. S. Jackson, whose house was that marked Urann, on the map (Fig. 8), I went with my father to see Mr. Richardson frequently as a child, and later by myself. Mr. Richardson was a highly cultivated man, with a keen interest in literature and the world, in spite of his secluded life. He was a shrewd observer and keen critic, with a deep fund of humor and sense of fun, bright, vivacious, resourceful, a delightful conversationalist and a good story teller. He was very fond of Scott's novels which, as well as poetry, he frequently quoted. Of very retiring and diffident disposition, he was little known to the public and only occasionally visited a few intimate friends. To his intimates he was cordial and gracious with an old time courtliness

[1]An obituary notice of Mr. George Richardson appeared in the Boston Evening Transcript, 29 May, 1861, p. 2. [Signed Dorchester, 28 May 1861. —H. (doubtless Rev. Nathaniel Hall, his pastor).]

of manner that was as captivating as it is uncommon. He was punctilious in observing little details of etiquette to a guest. Always carefully dressed in a black coat and vest, gray trousers, with a high stock and brown wig, in the street he wore a well brushed silk hat of old fashioned type. Straight as an arrow, he moved with a quick elastic step and never showed his age by stoop of shoulder or mental failing, but died in ripe old age with all his powers intact.

Mr. Richardson kept a horse and insisted that he should show a good gait. His carriage was an old-fashioned vehicle, a sort of combination of carryall and wagon, which he spoke of as the "go-cart." "Johnnie," he would call to his man of all work John Hynes, who lived with him for nineteen years, "Johnnie, go hitch up the go-cart." A frequent trip was to see Mr. James Jackson, who was a keen horticulturist, and had a small but choice garden at City Point, South Boston. To see these two old men, both experts, discussing the cultivation, merits or failings of their favorites was a delightful experience. He never took out the horse on Sunday, but Sunday morning, winter and summer, might be seen regularly walking to the Unitarian church on Meeting House Hill, about a mile distant. He regulated his departure so as to arrive at church just in time, and at the close of service was almost the first out, and walked directly and rapidly home. It took a quick walker to overtake him if he had a slight lead. This church, the First Parish Church of Dorchester, was a typical old New England meeting house of which he seemed a natural part. A figure of it is given by Orcutt (p. 225). This building was burned down in 1896, but its worthy successor is built on the same lines of beautiful simplicity.

Mr. Richardson was very fond of animals, and always kept a cat that received solicitous care. In winter he used to feed the gray squirrels with butternuts that he saved from his trees in the autumn. Opening the window in his sitting room he would call in his gentle voice, "Bun, Bun," and a squirrel would soon appear on the sill and take the nut from his hand. He was fond of birds, knew them by their note, and in earlier years kept many loose in a sunny room of his house that he fitted up as an aviary. This room on the east side of the house, seen in Pl. 5 (the two

THE RICHARDSON (EVERETT) HOUSE, BARN AND FRUIT HOUSE, FROM THE SOUTHWEST.

right hand windows of the second story), was in later years filled with house plants.

His family when I knew him consisted of his relatives, Miss Maynard and Miss Reynolds. Miss Maynard he always addressed as Miss Nancy, and she him as Mr. John, as did all his household, including help. A quainter household, or one in which heartier old time hospitality to a guest was shown, would be difficult to find.

In his will Mr. Richardson left to the City of Boston "the triangle" for a public park. On this land the historic Blake house now stands. (History of Dorchester, p. 388; Orcutt, p. 369–370, figure p. 63). This house, built prior to 1650, was in 1895 moved to its present site for preservation, by the Dorchester Historical Society.

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Mr. Richardson's House.

As the original location of Mr. Richardson's historic house is now ambiguous from the changed topography of the region, a sketch map (Fig. 8) is introduced copied from Whitney's map of Dorchester published in 1850. Chestnut Street, of this map, "was discontinued in 1853." (Dorchester Book, p. 15). Massachusetts Ave. has been built and also Columbia Road, which at this point absorbs parts of Pond and Boston Streets.

The Richardson house was located at the Five Corners, the junction of Boston, Cottage and Pond Streets. The house with its large garden and orchard, as a whole about three acres in extent, was Mr.

FIG. 8.—The Five-corners and adjacent territory in 1850.

Richardson's home for sixty eight years, up to his death in 1887. The house was built by Colonel Robert Oliver in 1745. It was also for a time the residence of his son, Lieutenant-Governor Thomas Oliver, (p. 187) who is "supposed to have laid out the garden," (Wilder) in the formal old lines that were never departed from. Succeeding the Olivers, the house after an interval, in 1782, passed into the hands of the Reverend Oliver Everett, whose eminent son Edward Everett, was born there 11 April 1794, also Sarah Preston Everett, the mother of Edward Everett Hale, was born there 5 Sept. 1796. Oliver Everett died 19 December 1802 (Dorchester Births, Marriages and Deaths).

A charming old colored cut of the house appeared in "Homes of American Authors" (p. 217). Many figures of the house have been published in local histories and similar works, all being taken from the southwest, as in Pl. 2. The figure in the Everett Centennial is perhaps the best published figure. From the front view it appeared to be a square house; but was in reality L shaped, as shown in Fig. 10. The roof was surmounted by a colonial type of balustrade, ornamented at the posts by a series of "flames" best seen in Pl. 2, and one of which is reproduced (Fig. 9), after Reverend Edward Everett Hale.

FIG. 9.—One of the "flames" surmounting the balustrade on the roof.

Mr. Richardson kept everything in good repair about the house but apparently never altered anything, so that with its old time dados and mantels, carved banisters, old-fashioned furniture and pictures it remained to the last an example of the fine old mansions of the past. The whole estate bore the marks of a very old place, unmodified in plan by changing time but added to and improved by a man skilled in the arts of horticulture.

As the only published description of the house is a very brief one in the Boston Herald, it is desirable to place something on record. The house, which is shown most clearly in the view taken in winter (Pl. 2), set back some sixty feet from the road on Pond Street and a little nearer to Boston Street. The sur-

THE RICHARDSON (EVERETT) HOUSE IN SUMMER, FROM THE SOUTHWEST.

A broad staircase with spirally carved banisters led to the second story. On the right was the sitting room (Pl. 6), where Mr. Richardson spent much of his time when in the house. The east windows of this room overlooked the garden, they being the two lower windows seen in the picture of the garden (Pl. 8). To the left of the main hall was the front parlor (Pl. 7), less occupied, but a delightful old-fashioned room with high dado, fireplace, old pictures and a piano with keys muffled, so that Mr. Richardson could practice on it without disturbing the household. The furniture was old-fashioned like that of all the house. The pictures seen in the figures of this room and the sitting room were painted by Mr. George Richardson, who was skilful with brush and pencil. The dining room was in the rear of the house, the two west windows to the left of the Boston Street doorway (Pl. 2) belonging to that room; another window looked into the garden (Pl. 8). From the hall adjacent to the dining room one door opened on to Boston Street (Pl. 2), and a second door faced the garden and is seen open in Pl. 8. A second stairway with spirally carved banisters led from this hall to the second story. The kitchen and shed lay to the north of the dining room (Pls. 2, 5). Upstairs were the large square bedrooms usual in old-time houses. The southwest corner room of Pl. 2, with windows facing south and west, was Mr. Richardson's bedroom, and the southeast corner bedroom, that on the right of Pl. 2, and the two upper windows of Pl. 8, is the room in which Edward Everett was born. From a closet in this room a secret stairway led to a small room above. This stairway was steep, about a foot wide, and was hidden by clothing hung in the closet. In the attic were a servant's room, store rooms and Mr. George Richardson's studio, one window of which is seen on the right in Pl. 5.

An old-fashioned barn, with stable yard in front, lay to the north of the house (Pl. 3); connected with the barn as seen on the left (Pl. 3), was a fruit house, built by Mr. George Richardson. There was no water or gas in the house, but the time-honored pump was in the shed and tool house back of the kitchen. Here were the usual assortment of garden tools, baskets neatly painted a dark green, the owner's garden gloves always stuck on the

MR. RICHARDSON'S SITTING ROOM, THE WINDOW ON RIGHT OVERLOOKED THE GARDEN.

MR. RICHARDSON'S PARLOR, THE PICTURES ON THE WALL WERE PAINTED BY HIS BROTHER.

handles of a large pair of garden shears ready to hand for a sally into the garden. Illumination was by whale oil, or later by cotton seed oil lamps.

This beautiful old house, a gem of antiquity, in the "march of progress" was torn down in 1898 and its site is empty, but close by is a modern three story apartment house. A house of such associations and such a choice example of colonial architecture should have been preserved. Further details in regard to the history of Mr. Richardson's house, and other houses with which it is associated are given on pages 187 to 190.

Mr. Richardson's Garden.

The garden (Pl. 8) lay on the east of the house, sloped gently eastward and was perhaps half an acre in extent. It was bounded by the house, barn and connecting fence on the west, a high board fence on the north, and a low paling fence on the east and south. Against this paling fence as seen in Pl. 8, some of his dahlias were grown and to it were tied as a support. In the garden were large grass plots intersected by square cut paths, bordered with box edging, within which were the long flower beds some six to eight feet wide. Excepting for the bulb border and beds of seedlings, all the plants were scattered, in what is called the mixed border system of planting. Peonies occupied salient points. Beyond the garden to the east lay the vegetable garden and orchard, of perhaps two acres in extent. Some fruit trees were also grown in the triangular piece of land opposite the house, bounded by Pond and Cottage Streets (Fig. 8) and always spoken of by the Richardsons as the "triangle." This piece of land belonged to Robert Oliver, but was not part of the Everett property. It was purchased at auction in 1841, by Mr. George Richardson, as recorded in his account book.

Mr. George Richardson took a very active interest in fruit and vegetable growing and planted many varieties of pears, apples, peaches, plums and quinces, various small fruits and vegetables. A favorite was some gooseberries called "Roaring Lions," that he imported. His brief diary, from 1819 on, is full of allusions

to the varieties of fruits and vegetables in the garden, and dates of planting or grafting. They made annually several barrels of wine from currants, red, white and black, also from grapes.

In his diary for many years Mr. George Richardson noted the arrival of the blue-birds, swallows, wrens, bob-o-lincolns (as he called them) and other birds. He noted also details of frost and weather in general, how much the hog weighed when dressed, and similar homely things which are full of interest coming from so far back and written with a loving interest in country life. John Richardson took an interest in fruit, especially pears, but his chief interest was in flowers.

Mr. Richardson had a perfect passion for horticulture and every plant in his garden that he loved so well was a real personality to him. His absorption in this interest lasted to the very end, for visiting him in his short illness, a few days before his death, the old subject was brought up just the same. It was a great treat to the horticulturist to visit his garden, for in it were large numbers of rare as well as common plants, and choice seedlings, all grown to a perfection that in itself gives to the experienced almost or quite as much pleasure as qualities of rareness or novelty. A walk with him about the garden meant a lingering at every step to consider the merits, the history or some cultural point in regard to the plants that were as his children. His taste was refined and exceptionally critical, so that a plant to meet his approval must have real merits, his commendation was a guarantee of excellence. The love of gardening was born with him, when a child he used to plant date seeds in his father's yard in Boston, and the fascination of raising plants from seed and thus producing new and improved varieties always clung to him. By this means he raised many choice dahlias, phloxes, deutzias and especially peonies, but it was not only these, everything that came to hand he tried to raise from seed. Peonies take about four to six years to bloom from seed, yet when nearly ninety he planted peony seeds just the same as in earlier years and some of his posthumous seedlings are amongst the best. Double flowers he especially admired, and he never cared for the single dahlias and peonies that have come to the fore in recent years.

He rarely picked his flowers except for a visitor and never had

MR. RICHARDSON'S HOUSE AND GARDEN FROM THE EAST; DAHLIAS, ISMENES, IRIS SIBIRICA AND A PEONY ARE SEEN IN THE FOREGROUND.

many cut flowers in the house.[1] A small glass vase on the piano in the sitting room usually had two or three blooms in it; but these were quite as likely to be from some other garden as from his own. Some look at a flower as something to be picked; but he preferred to leave them in the garden. An amusing story is told by a relative of his and since connection of my own, who went to ask him for a peony to use in designing for embroidery. He took her into the garden filled with splendid blooms, cut one and said: "Handle it very carefully or it will drop to pieces." He always refused to sell plants; but gave roots to a few garden friends.

Labels were an exception in Mr. Richardson's garden, for he rarely labeled anything, most of the plants being marked by a stick to locate their position, or not at all. He never in my experience spoke of any of his seedling peonies by name, but called them the early white, pink or crimson, etc. Mr. Richardson never kept any garden records as far as I am aware; but many details preceding my own time are gathered from my father's garden catalogue, which, beginning in 1857, contains at that and later dates many entries of plants received from Mr. Richardson.

Dahlias were special favorites, both the pompon and show varieties, and in autumn his garden was ablaze with choice blooms of rich and delicate colors. I have a shingle on which he wrote in a firm, clear hand, in 1887, the year of his death, a list of the dahlias in the garden, some twenty-six varieties including seedlings; he also indicated the number of plants of each variety, which added up made forty-seven. His dahlias were always grown to a single stem and usually trained against the fence espalier fashion, as shown in Pl. 8. He raised many fine seedling dahlias, seven of which I named and they are as follows:

Archibald Geike. Dark maroon crimson, pompon, very round and full, two colors showing, perfectly double.

Charles Lyell. Rich garnet red, pompon, perfectly double, extremely regular and well formed.

[1] The flowers seen in the interior views, Pl. 6 and 7, were from his garden, or my own; but were placed there for his funeral services.

E. Hitchcock. Large blush pink, tall grower, perfectly double.

Henry Rogers. Blush pink, petals quilled, very high flower, round as a ball, perfectly double.

J. D. Dana. Extremely dark crimson, pompon, very round, perfectly double.

J. D. Whitney. Crimson, perfectly double, rather flat flower, but very evenly set, dwarf habit.

Jules Marcou. Rich scarlet crimson, large, perfectly double, great bloomer.

A First Class Certificate of Merit was awarded the Richardson seedling dahlias Archibald Geike, and Charles Lyell, by the Society at the Annual Exhibition, 16–19 September 1884. The names however were not mentioned in the report, Transactions of this Society for 1884, part 2, p. 216 and 238.

When Tigridias were in bloom his garden in the early morning was ablaze with hundreds of blooms of red, yellow, orange and white varieties, though always with the red centre. He was very successful in carrying the bulbs through the winter, which all are not.

Ismene calithena was a favorite bulb with Mr. Richardson and he grew them in quantities, some being seen in the foreground of Pl. 8. This is a much overlooked plant, as it has fine white fragrant flowers, rich, broad foliage, and is very easily grown. The bulbs are planted in the open ground in May and dug up after frost. They should be kept in a warm, dry place in winter as they are sensitive to frost and dampness.

Bulbs always had a special fascination for him and in spring his border of hardy bulbs was a treat to see with its masses of bloom. The bulb border on the south side of a high board fence, was about one hundred feet long, and eight or nine feet wide. Close to the fence were fine clumps of crown imperials, red or yellow; next in front the whole length of the bed was filled with hyacinths and tulips. In an old bed of course the hyacinths were not of exhibition grade, but they made a splendid mass of bloom that was a feast of perfume and color. In the foreground of the bed were thousands of *Scilla Sibirica*, crocuses, mainly yellow, and a few other kinds of bulbs that made

a wide ribbon of color. He said this bed had been essentially as I knew it for thirty years, and it made one of the finest displays I ever saw. Besides the bulb border, bulbs were planted in bunches all about the formal garden. Especially prominent on account of their abundance were snow-drops, *Narcissus bicolor* var. *Horsfieldi*, *N. cernuus*, *N. poeticus*, *Frittilaria meleagris*, *Scilla nonscripta*, pink and blue, and Bybloemen tulips. He was delighted with *Chionodoxa luciliæ* when he first saw it in bloom from bulbs his friend Mr. John C. Hovey gave him.

A rare and choice plant that he prized was the double white perennial rocket, *Hesperis matronalis* var. *flore pleno*, of which there were numerous clumps about the garden. It is a difficult plant to grow and yet he grew it without protection. When propagating he divided it in the early autumn. This plant, as shown by records, he grew for at least thirty years.

Auriculas are somewhat difficult plants to cultivate, but he had a patch in the open ground, the flowers of which were a beautiful bluish purple, with a white mealy eye. They were a constant pleasure when in bloom.

Fine masses of perennial candytuft, *Iberis sempervirens*, that he raised from seed were scattered about the garden, and made showy patches of whiteness.

Phloxes he admired especially and grew large masses of *Phlox subulata*, pink, white, and white with a pink eye. He grew also the delicate blue *Phlox divaricata*. The tall summer phloxes, *P. paniculata*, were a special interest to him and he raised many good ones from seed. A bed devoted to these seedlings was always an interesting spot. The dull or magenta colored flowers he hated; "gizzard colored," as he aptly and quaintly termed them. To suit him the head must be large and full, the individual blooms round and well filled out, not "wind-milly," as he termed those with radial gaps in the corolla.

There were many irises in his garden, German, Spanish, English, and a few species, of these last, *Iris pallida*, *Sibirica* and *cristata* were favorites.

One of his most valuable productions from seed was a choice double white *Deutzia crenata* that I have named *John Richardson*. The flowers are individually very large, perfectly double,

almost entirely free from any trace of pink in the outer petals, and a profuse bloomer. Another virtue of this fine seedling is its extreme hardiness. *Deutzia crenata* and its varieties are apt to winter-kill badly, but in twenty-two years' experience with this seedling, *John Richardson*, it has never been materially injured.

Christmas roses, *Helleborus niger*, were favorite plants with Mr. Richardson. He grew them outside without protection, and in a mild spell in winter they were often full of blooms. As usual he raised seedlings, but nothing noteworthy.

Peonies, being such an important feature, are treated under a separate heading.

Mr. Richardson's Peonies.

Peonies were his special interest and he cherished them as the pride of the garden, which indeed they were. He grew *Pæonia tenuifolia*, both the single and the double form, *Pæonia officinalis* var. *rubra*, the double old garden favorite, and var. *alba*, the charming variety that is delicate pink on opening and turns white before fading. He also grew a few good tree peonies, but as far as known did not raise any seedlings of this class.

The *Pæonia albiflora* varieties, or Chinese peonies, were his specialty. He did not have a great many, some forty plants, at least in later years. In addition, however, he had his unbloomed seedlings, "candidates for fame," as he called them with a twinkle in his eye. After his death I took from his seed-bed some seventy-five unbloomed seedlings. This shows remarkable activity and a devotion to horticulture in a man nearly ninety years of age.

It was a treat to go into Mr. Richardson's garden with him in peony season. He would talk of his favorites with the spirit of an enthusiast, undimmed by advancing years, and even when not in bloom the flower in all its perfection was before his mind's eye and he would discuss them as he passed the plants in a walk about the garden.

A seedling peony had to be of high quality of excellence to meet his approval. He would have nothing else and singles or semi-doubles were discarded at once. Color and form to his

mind were of first importance as in other flowers; habit of growth was also an important character. It may be fairly said that an unusual number of his seedlings have a fine upright habit of growth, a most desirable feature. Another feature of Mr. Richardson's seedlings is their striking vigor of growth. In a collection of over two hundred varieties lately I was able to pick out the Richardson seedlings almost without exception by their superior size, and when mistaken it was because other varieties had a similar growth. In the measurements given in the following description of eighteen of his seedlings the average is thirty-seven and four-tenths inches in height from the ground to the flower, but not including the flower in the measurement. Records of peonies in his garden go back to 1857, when some fragrant forms are recorded, but for how much longer he had been growing them is not known. From 1857 to his death was thirty years, and in that period at least he was actively raising seedlings. According to George Paul peonies began to be cultivated by florists in England about 1840, and in 1855, so far as Paul could ascertain, there were twenty-four double varieties in the garden catalogues in England. In France and Belgium peonies were actively grown somewhat earlier, Paul says in France about 1824. It is seen therefore that Mr. Richardson's experience covered a large part of the period of active peony growing up to the time of his death.

The Richardson peonies are generally considered as late bloomers; but this is only partially true. Some seedlings are early as well as some late, so that they cover the whole season of this type. This year they were in bloom continuously, without a break, from the fourth of June into the early part of July, a full month. What the stock was from which he raised his remarkable seedlings is an interesting question, which cannot be answered with assurance. Most of his plants were seedlings as they were known to me. He had, however, a few good old peonies, Festiva (Donkelaer, 1838), which measured this year 28½ inches in height to the flower; Festiva Maxima (Miellez, 1851),[1] which

[1] Members of the American Peony Society, who have looked into the matter, say that Festiva Maxima originated with Miellez. Authorities differ however, as George Paul says: "In Belgium an amateur, M. Buyck, about 1835 produced, amongst others, Festiva Maxima."

measured 41½ inches to the flower; Pottsii Plena[1] (Calot? 1857), crimson, which measured 33½ inches to the flower, and a double white seedling raised by Mr. Carter of the Botanic Garden in Cambridge, which measured this year 36 inches to the flower. The foliage, habit and size of many of the Richardson seedlings resemble Festiva Maxima so closely that I am strongly of the opinion that they contain blood from that fine old standard. It is quite likely that the other varieties mentioned enter more or less into their composition.

To all who have grown them, Mr. Richardson's seedling peonies stand amongst the very best productions of this fine flower. As the late Francis Parkman, eminent historian and horticulturist, said to me: "They are unique." A judgment from one fitted by his own experience to express a critical opinion.

As already stated Mr. John Richardson did not name his seedlings, and even in peonies there are but few exceptions. These exceptions[2] are in varieties that he exhibited before the Society, when it is quite possible that he was requested to give them some name. These names he never afterward used so far as I am aware. Most of his seedling peonies were named by his friend Mr. John C. Hovey, who grew and exhibited them, or by myself. As there is so much confusion in nomenclature from duplication of names in common usage, I selected the names of eminent scientific men, hoping thus to avoid possible duplication. As many years ago I named and distributed some varieties already named without knowing that fact, I give my names as synonyms in such cases in the following description of the several varieties.

Mr. Thurlow states that Mr. Richardson bequeathed his peonies to Mr. John C. Hovey, but that is a mistake. Mr. Hovey received what peonies he had as a gift during Mr. Richardson's

[1] There are, as Mr. A. H. Fewkes writes me, no less than six peonies named Pottsii, or a variety of the same. Mr. Richardson's Pottsii is a rich deep crimson and double, though some stamens show in the centre. Individual blooms vary a good deal in the degree of doubleness, the extremes being almost perfectly double and semi-double, probably Calot's, 1857.

[2] By the records of the Society he exhibited under name the varieties Dorchester, and Rubra Superba. He also exhibited Perfection but without name.

life. Mr. Hovey when visiting me shortly before his death in 1894, on request dictated the names he had given and the descriptions of the Richardson seedlings in his possession. As this is an important matter to peony growers his description is given at this point.

John C. Hovey's description of Richardson Peonies in his garden.

"1. **Perfection**. Blush rose, Silver Medal, 23 June 1869. [For the change required in this name, see p. 183.]

"2. **Dorchester**. Bright rose, darker in centre. First Class Certificate of Merit, 9 July 1870.

"3. **Grandiflora**. Light rose, flat flower. First Class Certificate of Merit, 26 June 1883.

"4. **Rubra Superba**. Bright crimson carmine. First Class Certificate of Merit, 20 June 1871.

"5. **Norfolk**. Flowers large, cup shaped, light rose, darker centre, compact growing plant.

"6. **Francis B. Hayes**. Bright rose.

"7. **Cambridge**. Small bright rose, late. [Of this variety I have not been able to locate authentic specimens.]

"8. **John Richardson**. Small very double rose, like high Perfection, rose, blush edge.

"9. **Milton Hill**. Blush white, very double. First Class Certificate of Merit, 27 June 1891.

"These are all the Richardson seedlings that Mr. Hovey has."

DESCRIPTION OF MR. RICHARDSON'S SEEDLING PEONIES.

The following is a list with descriptions of the Richardson seedling peonies,[1] with synonyms where such exist and the awards they have received; these awards were all made by the Massachusetts Horticultural Society, so that for the sake of brevity the name of the Society is not further mentioned. The date of blooming this year is given, and also the height. The height was taken in August, and measures the distance from the

[1] A few posthumous seedlings that were single I have named, but as Mr. Richardson did not care for the singles, I omit them, also, though good. they are not distinct enough to be included in such a set.

ground to the calyx of the flower; with the flower, therefore, some inches would be added as a maximum height. The whole set of eighteen varieties was exhibited this year before the Society either on June 5, 11, or 21-22.

Charles Sedgwick Minot. Named by me. Clear satin pink, large very beautiful flower, guard petals broad, centre petals narrower, as long as guards, very high, round flower, perfectly double, no stamens or stigmas showing, very sweet scented, erect habit, a profuse bloomer. Posthumous seedling, in bloom 9 June 1904, height to flower 40 inches. Exhibited by me 11 June 1904, when it received a First Class Certificate of Merit. Named for Professor Charles Sedgwick Minot, embryologist, and a skilful grower of peonies.

Dorchester. Named by Mr. John Richardson (Synonym *George W. Tryon*). Light clear pink, cream color in centre, primrose yellow in centre when opening, sweet scented, perfectly double, no stamens or stigmas showing, medium sized flower, stands very erect on stem, free bloomer. In bloom 18 June 1904, height to flower 36 inches. Exhibited by Mr. Richardson, 9 July 1870, when it was awarded a First Class Certificate of Merit. Transactions of the Society for 1870, p. 51 and 96. Named for the locality in which it originated.

Francis B. Hayes. Named by Mr. John C. Hovey. Bright rose, perfectly double, no stamens or stigmas visible, central petals as long as guard petals, some laciniated petals with broad petals in centre, a fine bloomer, rather weak in the stem. In bloom 18 June 1904. Height to flower 27 inches, a measurement kindly sent me by Mrs. E. M. Gill. Named for the late Mr. Francis B. Hayes, a former President of this Society, and a patron of Horticulture.

Ferdinand Stoliczka. Named by me. Guard petals broad, a most delicate shell-pink, central petals narrower, erect, exquisite white, with a slight primrose cast, rounded at the tips, perfectly double, no stamens or stigmas showing, free bloomer, flowers erect, plant of vigorous growth, very choice. In bloom 10 June 1904, height to flower 27 inches; this measurement is inadequate as my plants had been recently moved and all the best blooms cut. A stronger plant in Dr. Walcott's garden measures 40½ inches to

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RICHARDSON SEEDLING : HENRY WOODWARD.

the flower. Exhibited by me 11 June 1904, when it received a First Class Certificate of Merit. Named for Ferdinand Stoliczka, a European palæontologist.

George B. Sowerby. Named by me. Guard petals delicate pink, in a flat row like a saucer, inner petals long, narrower, wrinkled, laciniated, white shaded yellow, very double, no stamens, but the stigmas are visible in centre when fully opened, very vigorous, free bloomer. Mr. Richardson aptly compared it to ice cream in a pink saucer. Very early, in bloom 4 June 1904, blooms have been supplied for decorations when no other Chinese peonies were to be found in the market, height to flower 39½ inches. Not one of the best of Mr. Richardson's seedlings, but desirable on account of its earliness and is a fine flower. Named for George B. Sowerby, an English conchologist.

Grandiflora. Named by Mr. John C. Hovey (synonym *Alpheus Hyatt*). Beautiful light rose pink, cupped in opening, quite flat when fully opened, petals nearly uniform throughout, very large, I have had flowers measuring nine inches in diameter. Flowers tend to bend over from their own weight and a not very rigid stem, perfectly double, no stamens or stigmas showing, a splendid flower. In bloom 15 June 1904, height to flower 43½ inches. Exhibited by Mr. John C. Hovey, 26 June 1883, when it received a First Class Certificate of Merit. Transactions of the Society for 1883, Part 2, p. 222 and 252. Named for its size, perhaps the greatest in diameter of any of the Richardson seedlings.

H. A. Hagen. Named by me. Bright, clear pink, cupped, exquisite color, perfectly double, no stamens or stigmas visible, all petals of a uniform color, flowers stand up very erect on the plant, quite close to "Norfolk"; but more uniform in color throughout. Posthumous seedling of Mr. Richardson's. In bloom 17 June 1904, height to flower 32½ inches. Named for the late Dr. H. A. Hagen, entomologist.

Henry Woodward. (Pl. 9.) Named by me. Light blush pink, lighter in centre, very large, rather flat flower, perfectly double, no stamens or stigmas visible, of good habit, but not as erect as some others. In bloom 21 June 1904, height to flower 42½ inches. Named for Dr. Henry Woodward, an English

palæontologist. A good figure of this peony, here reproduced, is given by Miller.

Isaac Lea. Rose pink with a slight purplish cast, perfectly double, under good culture develops some very large flowers. A good bloomer. In bloom 18 June 1904, height to flower 37½ inches. Named for Isaac Lea, an American conchologist.

John Richardson. Named by Mr. John C. Hovey for the originator of these choice peonies (synonym *Sven Lovén*). Blush rose, very double, fine form, color uniform throughout, no stamens or stigmas visible, erect habit. In bloom 18 June 1904, height to flower 40½ inches. Exhibited by me, 21 June 1904, when it received a First Class Certificate of Merit.

Milton Hill. (Pl. 10.) Named by Mr. John C. Hovey (synonym *Augustus A. Gould*). Flowers large, clear, soft flesh color throughout, a little pinker if shaded, or opened in the house, turns nearly white in the sun. Centre creamy in the opening bud, cupped in form, central petals set like a rose, perfectly double, no stamens or stigmas visible. A wonderfully beautiful flower, one of the choicest of known peonies. Plant of fine erect habit, and a good bloomer. Exhibited by John C. Hovey, 27 June 1891, when it received a First Class Certificate of Merit. Transactions of the Society for 1891, part 2, p. 276 and 295. In the Transactions, p. 276, the description reads, "with a few dark crimson markings in the centre." These markings must be very exceptional in this variety, as I have grown it since 1884 and have never seen crimson markings on any part of the flower. A late variety, in bloom 21 June, 1904, and considerably later, height to flower 33 inches. Named for Milton Hill, one of the most beautiful suburbs of Boston.

Norfolk. (Pl. 11, from a photograph kindly furnished by Mr. J. Woodward Manning.) Named by John C. Hovey (synonym *F. M. Balfour*). Flowers large, cup shaped, light rose pink, darker in centre, an extremely beautiful color. Perfectly double, no stamens or stigmas showing, a profuse bloomer, plant of good habit, one of the choicest of the Richardson seedlings. In bloom 18 June 1904, height to flower 35½ inches. Named Norfolk for the county in which the town of Dorchester (now part of the city of Boston) is situated.

RICHARDSON SEEDLING : MILTON HILL.

RICHARDSON SEEDLING : NORFOLK.

Paul Fischer. Named by me. Bright rose pink, perfectly double, cupped, no stamens or stigmas visible, especially attractive in the opening bud, medium sized flower, free bloomer, very erect. Foliage broad, vigorous and very distinct in character. This variety has unfortunately a tendency to be bull-headed, which is a serious fault, but it is such a distinct variety and yields such attractive flowers that it is well worth growing in spite of this fault. In bloom 9 June 1904, height to flower 32 inches. Named for Paul Fischer, a French conchologist.

Richardson's Perfection. Named *Perfection* by Mr. Richardson or Mr. John C. Hovey; which, is not certain. As another and older European variety is called *Queen's Perfection*, and in catalogues is usually listed under the name "Perfection," I throw out the name of the present variety as practically a duplication, *and alter the name to Richardson's Perfection*, thus retaining the original name yet giving it a distinctive standing. (Synonym *Karl A. Zittel.*) Flowers medium sized, light blush pink, lighter in centre, shaded to yellow at base of central petals. Perfectly double, no stamens or stigmas visible. A full high flower, fragrant, of very upright habit, and a free bloomer, an extremely choice all round peony. Bud before opening very high as are many of the Richardson seedlings, and with a curious dull green calyx striped with darker green. In bloom 19 June 1904, height to flower 38½ inches. Exhibited by Mr. Richardson 23 June 1869, when it was awarded a Silver Medal. Transactions of the Society for 1869, p. 34 and 66. In the Transactions the name *Perfection* does not appear, but we read, "John Richardson showed a fine seedling herbaceous peony (no. 1)." The name therefore was probably added later, very possibly by Mr. Hovey. The Society record also reads, "of the many named varieties in cultivation but few equal this." The name combines that of the originator, with the quality, well expressed by the word Perfection.

R. P. Whitfield. Named by me. Light pink, shaded to lighter in centre, rather flat flower, perfectly double, no stamens or stigmas visible, free bloomer. In bloom 20 June 1904, height to flower 40 inches. Named for Prof. R. P. Whitfield, palæontologist in the American Museum, New York.

Rubra Superba. Named by Mr. John Richardson (synonym *W. G. Binney*). Bright crimson carmine, with no trace of purple tinge, a fine clear color, uniform color throughout, all petals rose-shaped, cupped, no stamens or stigmas visible, flower of good size, fragrant, very erect, plant robust. Considered one of the best of all crimson peonies and the only one of this color in the set. In bloom 17 June 1904, and much later, height to flower 41 inches. Exhibited by Mr. Richardson 20 June 1871, when it received a First Class Certificate of Merit. Transactions of the Society for 1871, p. 64 and 111. Named for its color and quality.

Samuel Henshaw. (Pl. 12.) Named by me. Outer petals clear rose pink, tinged with white, inner petals pink and white intermingled, the white predominating, very large and full flower, a little low in the centre, in hot sun turns nearly or quite white throughout. Very large and of wonderful vigor, the stem nearly as large as a lady's little finger, stands upright through heavy wind and rain unharmed, of very distinctive character. To get best results it should be shaded from hot sun, disbudded and freely manured. It is then a magnificent peony. In bloom 20 June 1904, height to flower 34 inches; the tallest blooms much exceeded this measurement, but had been cut for exhibition. Exhibited by me 21 June 1904, when it was awarded a Silver Medal. Posthumous seedling of Mr. Richardson's, named for Mr. Samuel Henshaw, entomologist and Curator of the Museum of Comparative Zoölogy, at Harvard University. (See p. 190).

Walter Faxon. Clear bright pink, brighter in centre, the most exquisite shade of pink I have seen in a peony, very double, but a few stamens show in the centre, no stigmas visible, cupped, a profuse bloomer. Lateral buds develop with the leading buds, so that beautiful clusters are produced. One of the very best and most distinctive of Mr. Richardson's choice productions. In bloom 15 June 1904, height to flower 40½ inches. Exhibited by me 21 June 1904, when it received a First Class Certificate of Merit. Named for Dr. Walter Faxon, zoölogist.

RICHARDSON SEEDLING : SAMUEL HENSHAW.

Plants in Mr. Richardson's Garden.

A list of plants in Mr. Richardson's garden in 1887, the year of his death; taken from a list I prepared at that time.

Achillea tomentosa.
Achimenes.
Acidanthera bicolor.
Aconitum Napellus.
Actaea spicata var. *rubra.*
Adiantum pedatum.
Adlumia cirrhosa.
Adonis vernalis, in quantity and seedlings.
Allium, several species.
Alyssum saxatile.
Amaryllis Belladonna.
" *formosissima.*
" *Hallii.*
Anemone Japonica.
" *Pennsylvanica.*
Antirrhinum, annuals.
Aquilegia chrysantha.
" hybrids.
Arabis albida.
" " var. *variegata.*
Asters, a few perennial natives and garden annuals.
Aspidium acrostichoides.
Astilbe Japonica.
Astrantia major.
Azalea viscosa.
Begonias, a few house varieties.
Brodiæa congesta.
Buxus sempervirens, as box edging.
Calycanthus Florida, including seedlings.
Campanula Carpatica, blue and white.
Campanula medium (Canterbury bells), blue and white in quantity.
Campanula persicifolia, blue and white.
Campanula rotundifolia.
Cassia Marylandica.
Chionodoxa luciliæ.
Clematis Alpina.
" garden varieties.
Colchicum autumnale.
" *variegatum.*
Convallaria majalis.
Cornus Mas.
Crocuses, in profusion, especially yellow.
Dahlias, double, of which he was very fond, some 26 varieties, including seedlings.
Delphinium formosum.
Deutzia crenata, double seedlings, including the seedling which I named "John Richardson."
Deutzia gracilis.
Dianthus barbatus vars.
" in variety.
Dicentra spectabilis.
Dictamnus fraxinella, purple and white.
Digitalis purpurea, pink and white in quantity.
Dodecatheon Meadia, rose and white.
Euonymus radicans var. *variegata.*
Eupatorium ageratoides.
Freesia refracta, in the house in winter.
Fritillaria imperialis, yellow and red.
Fritillaria Meleagris, red and white, and seedlings.
Funkia ovata.
" *subcordata.*
Fuschsias, in variety, a favorite with him.
Galium asprellum.

Gentiana acaulis.
Geranium sanguineum.
Gladiolus gandavensis, varieties.
Globularia vulgaris.
Helleborus niger, in abundance, including seedlings.
Hemerocallis flava.
" *fulva* var. *variegata.*
Hepatica triloba.
Hesperis matronalis var. *flore pleno alba*, a choice, rare old plant, in abundance.
Hyacinthus amethystinus.
" *botryoides*, blue and white.
" *candicans.*
" *monstrosus.*
" *moschatus.*
" *orientalis*, garden varieties in quantity.
Hypericum Kalmianum.
Iberis sempervirens, a seedling of fine quality.
Iris anglica, varieties.
" *cristata.*
" *Germanica*, varieties.
" *Hispanica*, varieties.
" *pallida.*
" *Sibirica.*
" *Sibirica* var. *sanguinea.*
" *Virginiana.*
Ismene calithena, in quantity.
Kalmia latifolia.
Lantanas, several in pots.
Leucojum vernum.
Lilium canadense.
" *candidum*, in quantity.
" *lancifolium*, in quantity.
" *longiflorum.*
" *martagon* var. *album.*
" *Philadelphicum.*
" *superbum.*
" *tenuifolium*, a special favorite.
Lobelia cardinalis.
Lonicera, several vines trained on buildings.
Lychnis chalcedonica, single and double.
Lychnis Haageana.
Mertensia virginica.
Milla biflora.
Montbretia crocosmiæflora.
Myosotis palustris.
Narcissus bicolor var. *Horsfieldi*, a favorite, in quantity.
Narcissus biflorus.
" *cernuus*, a charming early species, too little known.
Narcissus var. *Emperor* and *Empress.*
" *odorus* var. *Campernelle.*
" *poeticus*, in quantity.
Opuntia sp. hardy.
Pæonia albiflora, a few old varieties; Festiva, Festiva Maxima, Potsii-plena, numerous choice seedlings as described, and at the time of his death about 75 unbloomed seedlings.
Pæonia Moutan, several good varieties.
Pæonia officinalis var. *rubra.*
" " " *alba.*
" *tenuifolia*, single.
" " double.
Papaver orientale.
Pelargoniums, a few garden varieties.
Phegopteris Dryopteris.
Philadelphus coronarius.
Phlox divaricata.
" *paniculata*, some fine varieties and seedlings, always seedlings coming on.
Phlox subulata, several varieties.
Platycodon grandiflorum, blue and white, in quantity.
Polemonium reptans.
Polygonatum giganteum.
Primula auricula.
" *officinalis.*
Rosa rugosa.
" *setigera.*
" dwarf Scotch, white.

Roses, several hybrid perpetuals, also old-fashioned June roses.
Scilla nonscripta, blue, white and pink in abundance.
Scilla Sibirica, in profusion.
Sanguinaria Canadensis.
Saxifraga palmata.
Sedum Nevii.
" *spectabilis*.
Seriocarpus solidagineus.
Spiræa filipendula.
" " var. *flore pleno*.
" *prunifolia*.
" *ulmaria*.
Stellaria holostea.
Syringa Persica.
" *vulgaris*, purple and white.
Taxus baccata var. *Canadensis*.
Thalictrum anemonoides.
Thymus serpyllum.
Tigridias, lemon, orange, crimson, and white, in profusion.
Trillium erythrocarpum.
" *grandiflorum*, in large clumps, a special favorite.
Tulips, many garden varieties in abundance.
Veronica, two species.
Viburnum opulus.
Viola, several species.
Weigelia rosea.
Yucca filamentosa.
Zephyranthes rosea.

History of the Richardson (Everett) House and Associated Houses, with some Account of their Owners.

The history of the Richardson or Everett House, as we will now call it, and the historical houses with which it is intimately associated is so interesting, both during colonial and later times, that it is well worth consideration. I write it the more freely because it can only be gathered by consulting a number of sources of information, and collating the same.

Mr. James H. Stark of Dorchester, who has done much by his publications to perpetuate the old landmarks and records of Boston, worked out a careful history of the several owners and residents of the Everett House. Records from the Registry of Deeds are given in his paper, but as they are in print it did not seem necessary to repeat them. Further information was gathered from Paige, Oliver, Harris and other sources as noted.

"About 1737, Robert Oliver, a wealthy planter from Antigua [West Indies], settled in Dorchester. ....[William H. Whitmore cites records of purchases of land in Dorchester by Robert Oliver in 1738, and at later dates, and a petition by him in 1739 as a house owner to the town of Dorchester.] He brought a wife,

Anne[1], and one son Thomas, who became later the last Lieutenant-Governor of the Province of Massachusetts. .... Robert bought a number of pieces of land [in Dorchester], of which 30 acres had been the property of Comfort Foster; and on this homestead lot, he built in 1745, a fine mansion which took the place of a more modest house. [Pl. 2].... Tradition records that he brought many black slaves with him, and dwells with scornful pity upon the fact that they carried burdens on their heads in ignorance of the proper use of a Yankee wheelbarrow." (Stark). Three of his slaves, named Ann, Cambridge and Betty, according to Trask are buried in the old North Cemetery in Dorchester. In his paper Trask comments on Oliver's slaves, and their method of working.

"Robert Oliver, Esq., 3rd son of Colonel Richard Oliver of Antigua .... married at St. Johns [Antigua] 3 Feb. 1722, Ann Brown, dau. of James Brown of Antigua by Eliz.[abeth] his wife, which Eliz.[abeth] Brown, Wid. married 2ndly in 1707, Isaac Royall of Antigua."[2] Robert and Ann Oliver had children, James baptized 19 Feb. 1729/30 at St. Johns; Thomas born 5 Jan. 1733/4 at Antigua; Samuel, baptized 20 Jan. 1734/5 at St. Johns; Ann, baptized 22 Oct. 1724 at St. Johns [James, Samuel and Ann probably all died young]; Isaac, born 20 September 1738; Elizabeth, born 13 October 1741, and Richard, born 19th May 1744, the last three all in Dorchester. Robert Oliver's wife died 20 December 1751, and he died 16 December 1762 (dates from Oliver, vol. 2, and Dorchester Births, Marriages and Deaths). "The Boston Post-Boy for December 20 1762 has the following brief obituary. Thursday morning last, died at his Seat in Dorchester, in the 63d Year of his Age, Col. Robert Oliver. A Gentleman of an extensive Acquaintance, remarkable for his Hospitality to All, was Kind to the Poor, and in his Military Character belov'd and esteem'd: his Family and Neighbors have met with a great Loss in this Bereavment. His Remains are to be interr'd Tomorrow at 3 o'clock in the Family Tomb at Dorchester." (Stark.)

[1] Oliver, Paige and other authorities usually spell the name Ann.

[2] Oliver, vol. 1, p. 76–77, vol. 2, p. 346–347. He gives records of both marriages from the Parish Register at St. John.

Thomas Oliver, son of Robert, graduated from Harvard College 1758, taking the degrees of A. B. and A. M. He married Elizabeth, daughter of Colonel John Vassall, Senior, of Cambridge in 1760 (Paige, p. 619), Thomas's sister as stated marrying Colonel John Vassall the Second in the following year, thus making a double marriage between the two families. Thomas and Elizabeth Oliver had children, Ann, born 17 November 1763; Elizabeth, born 12 July 1766, in Dorchester (Dorchester Births, Marriages and Deaths); Penelope, baptized 2 October 1768, in Cambridge, where in the records of Christs Church are recorded the baptisms of all three children (Harris, in the Vassalls of N. E.). There were also three other children, Mary, Lucy and Frances. Thomas Oliver's wife Elizabeth died after he went to England and he married 3 June 1781 at St. Johns, Antigua, Harriet, only child and heir of the Hon. Byam Freeman of Antigua. By his second wife he had Harriet Watkins and Emily Freeman. (Oliver, vol. 3, p. 346–347).

"Robert Oliver in his will gave his son Thomas, a suit of mourning, a ring and twenty shillings, and no more, because Thomas's grandfather James Brown and his great-uncle Robert Oliver had already given him a greater estate than the father could." (Stark).

Probably on account of close relations with the Vassall and other families resident in Cambridge, in 1766 Oliver moved to that town. "Thomas Oliver disposed of his property in Dorchester when he went to Cambridge. On July 1, 1766.... he sold to Ebenezer and Lemuel Clap, about thirty-nine acres of land, reserving only the mansion-house and barn, and the land in front of it. This lot with the reservation covered almost precisely the original possession of Comfort Foster.... We do not know who occupied the Oliver house for the next few years, but on 11 May, 1770,.... Thomas Oliver sold the house etc. with three and one half acres of land, for £250 to Richard Lechmere [of Cambridge] giving him also about half an acre on the south front.... [the "triangle," of fig. 8]. Richard Lechmere was the uncle by marriage of Oliver's wife, he having married Mary Phips, whose sister Elizabeth married Col. John Vassall." (Stark.)

"We will now trace the house and land. Richard Lechmere sold them 15 January 1771, to Ezekial Lewis.... Lewis sold them 4 April 1771.... to John Vassall [brother-in-law of Thomas Oliver]. Vassall was a Royalist and a refugee, and was banished by act of the Legislature, his property being confiscated. On June 12, 1781,.... Richard Cranch, Samuel Henshaw and Samuel Barrett, a committee for such purposes, sold the property to John Williams..... [John Williams executors] on November 24, 1786, sold it to Bossinger Foster,.... Bossinger Foster sold it to Lucretia Callahan, November 2, 1787,.... John and Lucretia Callahan sold it to Oliver Everett, November 10, 1792." (Stark.)

It is an interesting coincidence that one of the choice seedling peonies raised by Mr. John Richardson, more than a hundred years later on these grounds, is named Samuel Henshaw, in honor of the gentleman who is the great-grandson of Samuel Henshaw mentioned in the preceding paragraph (see p. 184).

"Rev. Oliver Everett died on November 19th, 1802. The following spring his widow with her family removed to Boston. From this time, until it was sold by Edward Everett, no members of the family resided there, it being leased to various persons." (Stark.)

George Richardson leased the house of Mrs. Everett first in the spring of 1819. "Edward Everett sold it to George Richardson November 10, 1833." (Stark). Mr. George Richardson's account book says 1 October 1833, but Stark's date refers to the date when papers were officially recorded. John Richardson inherited the estate from his brother George in 1861, and on the death of John Richardson his executors sold the house and part of the estate to William Stanford Stevens "October 19, 1888" (Stark). As stated (p. 171), the "triangle," a piece of land lying between Pond and Cottage Streets (fig. 8), which was originally part of the Oliver estate, was not purchased from the Everetts, but was purchased at auction by George Richardson in 1841. John Richardson bequeathed "the triangle" to the city of Boston "to be used as a park or any other purpose except being sold for house lots." (John Richardson's will). For description and illustrations of the Everett house, see pages 167 to 171, figures 8 to 10 and plates 2 to 8.

"Thomas Oliver remained for several years in Dorchester after his father's death" (Stark), "until 1766, when he purchased an estate on Elmwood Avenue, near Mount Auburn [Cambridge], and erected the mansion afterwards the residence of Gov. Gerry, and .... James Russell Lowell." (Paige, p. 619). Pl. 13.

Drake (p. 318) questions whether Oliver built the Lowell house, as he says: "It has often been stated that this house was built by Colonel Thomas Oliver .... about 1760; but as the estate was only leased by him until the year 1770, when he acquired the title by purchase of the heirs of John Stratton, of Watertown, we do not give full credence to the assertion .... Moreover, in the conveyance to Oliver the messuage itself is named." Oliver purchased a number of parcels of real estate in Cambridge, part of which are considered in the following. He purchased, 8 October 1766 (Middlesex Deeds, Book 66, p. 375), of Christopher Grant thirty-eight acres in this vicinity, among which was a parcel of land with a dwelling house and barn, consisting of six acres, bounding easterly and southerly on the Great Road leading to Watertown [*i. e.* the corner of Elmwood Avenue and Mt. Auburn Street], westerly on land of Seth Hastings, and northerly on land of Joseph Palmer. [This parcel of six acres purchased of Grant, from its location and size, necessarily included the site of the Lowell house]. Oliver purchased, 31 March 1767 (Middlesex Deeds, Book 66, p. 624), of Joseph Palmer fifteen acres bounding easterly on the Great Road leading to Watertown [now Elmwood Avenue], southerly on land Thomas Oliver bought of Christopher Grant, westerly on land of Seth Hastings, and northerly on land of Samuel Thacher and George Ruggles. In 1770 (Middlesex Deeds, Book 70, p. 134) Oliver leased of the widow, and in the same year purchased (Book 71, p. 9, 11, 12) of the heirs of John Stratton[1] a certain messuage and parcel of land containing about seventeen acres, lying on the northerly side of the present Mt. Auburn Street,

[1]John Stratton "married Mercy Norcross 3 May 1750." (Paige.) His widow later married Christopher Grant, from whom Oliver bought land in 1766 Grant's name appears in both the deed of 1766, and the lease of 1770, in the deed in his own right, and in the lease as the husband of his wife, widow of Stratton, to whom the land had been assigned as dower.

and extending to Fresh Pond. This is evidently the *messuage* and land referred to by Drake, but could not include the present Lowell house, which must stand on the land purchased of Grant in 1766. John Stratton's land was farther to the westward on Mt. Auburn Street; Seth Hastings's land of forty acres extending from Mt. Auburn Street to Fresh Pond, and immediately adjoining Oliver's land on the west, as recited in Grant's deed to Oliver. I find no evidence that Christopher Grant was a man of wealth, so that there is no great probability of his having owned or built such a house. The Lowell house, while not resembling the Everett house closely, has a roof balustrade with flames, and in the interior finish has dadoes, wainscoting and carved banisters which are very similar to those of the Everett house. If not a direct imitation, these similarities at least indicate a near period of construction to that of the Everett house, which Thomas's father built in 1745. It seems therefore that all the evidence favors the view that Thomas Oliver tore down the house standing on land purchased of Grant in 1766 and built the mansion now known as the Lowell house. In the deed from Grant, Thomas Oliver is described as of Dorchester, whereas in all subsequent deeds as of Cambridge. The details of Oliver's purchases gathered from the Registry of Deeds are facts kindly furnished me by Henry M. Spelman, Esq., of Cambridge.

Continuing with the account of Thomas Oliver: "Being a man of fortune, he was not actively engaged in business; nor did he mingle in the stormy political contests of that eventful period, until, in a day fatal to his peace and quiet, he accepted the office of Lieutenant-governor of the Province [of Massachusetts], and President of a Council appointed by the King in a manner particularly obnoxious to popular resentment. On the morning of 2 Sept. 1774, a large number of Middlesex free-holders (Gov. Oliver says about four thousand, assembled at Cambridge, and induced the recently appointed Mandamus Councillors to renounce their offices. The President of the Council was not spared; but, though he urgently requested delay, inasmuch as he could not with propriety renounce that office, while he held that of Lieut-gov., yet he finally yielded, and signed a solemn engagement 'as a man of honor and a Christian,' that he would

THOMAS OLIVER'S HOUSE IN CAMBRIDGE; LATER THE RESIDENCE OF ELBRIDGE GERRY, AND JAMES RUSSELL LOWELL.

'never hereafter, upon any terms whatsoever, accept a seat at said Board, on the present novel and oppressive plan of government.' He left Cambridge immediately, and never returned. At the evacuation of Boston he accompanied the British forces, soon went to England, and d. at Bristol [England] 20 Nov. 1815, a. 82." (Paige, p. 619–620.) "Though he forfeited a large estate here, he was wealthy from his possessions in the West Indies; still owned by his descendents." (Stark.) "Lieutenant Governor Oliver was a quiet, reserved man, but little known in public life, though ever distinguished by his amiable and gentlemanly grace." (Harris, Vassalls of N. E., p. 124.)

Continuing the consideration of Thomas Oliver's house in Cambridge (Pl. 13). "The house was one of a succession of spacious dwellings set in broad fields, bordering the Charles River, built in the eighteenth century, and occupied for the most part, before the War of Independence, by loyal merchants and officers of the Crown .... the owners of these estates left them, one by one, as they were forced out by the revolt of the province: but the name of Tory Row lingered about the group .... [Oliver's house in Cambridge after his leaving] with others in the neighborhood, was seized for public use. When the American army was posted in Cambridge it was used as a hospital for soldiers .... ["It being represented that the present hospital is not large enough to contain the sick, Lieut.-gov. Oliver's house is to be cleared for that purpose, and care to be taken that no injury is done to it." (Paige, p. 418). To this "care" we doubtless owe much for its good preservation]. Subsequently the estate was confiscated and sold by the Commonwealth .... The purchaser was Arthur Cabot, of Salem,[1] who later sold it to Elbridge Gerry, Governor of Massachusetts from 1810–1812, and Vice-President of the United States under Madison, from 4 March, 1813, until his sudden death, 23 November, 1814.... In 1818 .... the homestead and some ten acres of land, was sold by Gerry's heirs to the Rev. Charles Lowell." (Scudder, p. 1, 2, 5, 6.) His eminent and youngest son, James Russell Lowell was

[1] Mr. Scudder says Arthur Cabot of Salem, but official records (Middlesex Deeds, Book 95, p. 338) say Andrew Cabot of Beverly.

born there in 1819. Elmwood, as Lowell called it, was his life long, cherished home, and was immortalized by his pen.

Thomas and Elizabeth Oliver as stated married respectively a daughter and a son of Colonel John Vassall, and this association is of great interest. Colonel John Vassall, Senior, son of Major Leonard Vassall, was born in the West Indies 7 September 1713, and graduated from Harvard College 1732 [taking the degrees of A.B. and A.M.]. He married Elizabeth, daughter of Lieutenant Governor Spencer Phips, 10 October 1734; she died 22 September 1739, and he married Lucy, only daughter of Jonathan Barron, of Chelmsford. His children were Ruth, born 14 July 1737, who married Edward Davis of Boston; John, born 12 June 1738 who married Elizabeth Oliver of Dorchester; Elizabeth born 12 September 1739, who married Thomas Oliver of Dorchester, 11 June 1760; Lucy born 15 November 1747, who married John Lavicourt of Antigua. Colonel John Vassall the father bought, 26 July 1736, a house and seven acres of land at the westerly corner of Brattle and Ash Streets, Cambridge, which estate he sold 30 December 1741 to his brother Henry, having probably, in the mean time, either erected or much enlarged the house. This house, which is still standing, is one of the fine old mansions of Cambridge, and is known as the Henry Vassall house, or the Governor Belcher house. Colonel John Vassall later, 17 January 1746, bought six and a half acres on the opposite side of Brattle Street on which the Longfellow house was later built by his son. He died 27 November 1747 [and his tomb is a prominent feature in the old burying ground in Cambridge [1]]. (Paige, p. 674–675).

Henry Vassall, the brother of John, as noted above, "was born in the West Indies 25 December 1721, and married Penelope, the daughter of Isaac Royall, of Medford, 28 January 1742. (Paige, p. 675). As Mrs. Royall was the grandmother of Thomas Oliver (p. 188) her daughter who married Henry Vassall was consequently the aunt of Thomas Oliver and also half-sister to Thomas's mother, Mrs. Robert Oliver of Dorchester.

John Vassall, Second, the son of John Vassall, Senior, born in

[1] Figured by Freese (p. 9).

1738, graduated from Harvard College, 1757, ten years after his father's death and married Elizabeth the daughter of Robert Oliver and sister of Thomas Oliver, the 12 June 1761, and had John, born 7 May 1762; Spencer Thomas, born 7 April 1764; Thomas Oliver, born 12 April 1766; Elizabeth baptized 5 July 1767; Robert Oliver, born 28 May 1769; Elizabeth, born 5 May 1771; Leonard, born 1773; and Mary, born in London 26 March 1777. (Paige, p. 675.)

John Vassall, Second, about the time he married Elizabeth Oliver (Drake says about 1759): On the estate originally inherited from his father and by subsequent purchases greatly enlarged erected the splendid mansion[1] (Harris[2]), which was known later as the Washington Headquarters and for many years the homestead of Longfellow. Vassall abandoned it at the commencement of the Revolution and fled with his family to England where he died suddenly 2 October 1797. (Paige, p. 675.)

After Mt. Vernon this house (Pl. 14) is perhaps the best known house in America. A number of good exterior and interior views of the house and grounds have been recently published by Capen, and Holtzoper gives a fine plate of the main doorway. A most interesting account of the various occupants of the house is given by Drake, from which the following facts are taken. Colonel John Vassall, in 1775 became a refugee and retired to England. During the Revolution Colonel John Glover of Marblehead with his famous Marblehead regiment occupied the house as headquarters for a period, it then for eight months became the residence and headquarters of Washington until April 1776. After the war it was occupied by Nathaniel Tracy of Newburyport, who was a brother of my great-grandmother. Then by Thomas Russell; Dr. Andrew Craigie; Jared Sparks, the historian; Edward Everett, while a professor in Harvard College; Willard; Phillips; and Worcester, the lexicographer. In 1837 the poet Longfellow became an inmate, with Mrs. Craigie for landlady, and it was thereafter his beloved home. Washington and Longfellow both

[1] Drake says, p. 292, that the house was erected by John Vassall, whose tomb is in the Cambridge Cemetery, but this is an error as he died in 1747.

[2] Harris, in his Vassalls of New England gives very full accounts of land purchases of the family.

occupied as their bed-chamber the southeast room, the right hand of the figure. From this room emanated thoughts of war and thoughts of peace that stirred a nation to its depths.

Still another famous house is closely associated with the Olivers and therefore with the Everett house in Dorchester, namely the Isaac Royall house in Medford, Pl. 14. Freese gives a delightful view of the house, taken in summer, and Holtzoper figures in detail the doorways on the front and rear of the house. Mrs. Robert Oliver was a daughter of James Brown, of Antigua (p. 188), her mother, Mrs. James Brown, after her husband's death married in 1707 Isaac Royall,[1] a wealthy merchant of Antigua. According to Harris, Isaac Royall in 1732 purchased of the heirs of Lieutenant Governor Usher an estate in Charlestown (Medford) containing about five hundred acres; the house still standing, and widely known as the Royall Mansion was built by Usher. Although the conveyance was dated 1732, Harris says there is evidence that Royall did not occupy his Medford property until some years later. The interior of this house is perhaps the most beautifully ornamented of any old house of its period in this vicinity. Slave quarters were built near the house and the grounds laid out in elegant taste with fruit trees, shrubbery, garden, etc. Isaac Royall died 7 June 1739, and his widow in 1747. According to Drake, she was interred from Colonel Oliver's house in Dorchester [Mrs. Oliver being her daughter], and is buried in the tomb with her husband in the old burying ground in that town. In the tomb are interred William Royall, of Maine, his son Isaac, Senior, the latter's wife, and other members of the family.

[1] Isaac Royall, son of William, of North Yarmouth, Maine, and later Dorchester, Mass., married 1 July 1697 in Boston, Elizabeth, widow of one Oliver, and daughter of Asaph Eliot. They had one child, Asaph that died in infancy. Harris in his account of the family cites this marriage and birth, but overlooked a second marriage. Oliver shows that Isaac Royall married secondly, Elizabeth, widow of James Brown, at Antigua, 3 (? June) 1707, and quotes the Parish Register at St. Johns in proof. The fact that Isaac's second wife had the same given name as the first fostered the oversight. Isaac's second wife therefore was the mother of Isaac, Second; and Penelope, who married Henry Vassall; not his first wife, as stated by Harris.

JOHN VASSALL'S HOUSE IN CAMBRIDGE; LATER OCCUPIED BY WASHINGTON, AND THE HOME OF THE POET LONGFELLOW.

ISAAC ROYALL HOUSE IN MEDFORD.

The monument at the Royall tomb, in the old cemetery at Upham's Corner, Dorchester, consists of a horizontal slab of marble supported by five sandstone columns. The slab bears a coat of arms consisting of three sheaves of wheat enclosed in a scroll and the following inscription; part of which is nearly effaced by weathering.

"Here lyeth ye Body of WILLM ROYALL | of North Yarmouth, in the PROVINCE | of MAIN. who departed this Life, | Novbr ye 7TH 1724 in ye 85TH Year of his Age | this Stone is Erected, to ye Pious Memory | of his Father, by his Eldest Son ISAAC | as the last Act of a dutifull remembrance" |

"Here lyes the Body | of the Honble. ISAAC ROYALL Esqr | Who departed this Life at his Seat in Charlestown | June ye 7th Anno Domni 1739 Ætatis 67. | He was a gentn of Superior natural powers & great acquired knowledge | Civil affable courteous & Just to all Men | Remarkably Dutifull to his Parents, Kind to his Relations & Charitable to ye Poor. | He was a faithful Husband a tender Father a Kind Master & a True Friend | Delighted in doing good. | He was highly esteemed & respected during his residence at *Antigua* which was near 40 Years | and advanced to ye most Honourable & important Publick employments Civil & Military | Which He discharged with ye highest reputation & fidelity | He Returned with His Family to *New England* His Native Country | July 27 1737 | Where His death which Soon followed was greatly Lamented by all who Knew Him | He Lived a Virtuous Life So He was removed by a peacefull Death | Leaving a SON & DAUGHTER | To inherit a plentifull Fortune which He was Blesd with | And an exemplary Pattern for Their imitation | at His desire His Remains were here | Interred with His Parents | For whom He Erected this | MONUMENT." | [1]

Isaac Royall the Second kept up his father's place in Medford and his daughters married respectively George Erving and Sir William Pepperell of Portsmouth. (Oliver.) He founded the

[1] Oliver in publishing this epitaph makes several errors in the transcription and says that the second portion, or epitaph to Isaac, is on a separate tomb, but this is a mistake, the whole, as quoted, being on a single slab.

Royall Professorship of Law at Harvard, the first law professorship of that university. In the library of the Harvard Law School is a portrait of Isaac Royall, Second — his wife, sister Penelope, wife's sister and child, painted in 1740, by Robert Feke, a Quaker of Newport. (Brown.) Isaac Royall being driven out by the Revolution, his house became headquarters for Generals Stark and Lee, and in 1810 passed into the possession of Jacob Tidd. (Drake.)

Such an intimate association of old houses is remarkable, all interesting as choice examples of colonial architecture, the homes of prominent families in colonial times, and later full of historic interest as homes for longer or shorter periods of many of America's most illustrious men.

To state the relation of families and houses in brief: Thomas Oliver's father built the Everett house; his grandmother Royall and her husband lived in the Royall house in Medford, Thomas Oliver doubtless built the Lowell house, and his brother-in-law, John Vassall, built the Longfellow house. In addition Thomas Oliver's near of kin occupied most of the famous old houses in Cambridge known as "Tory Row." His aunt Penelope,[1] wife of Henry Vassall, lived in the Governor Belcher house; his wife's aunt Mary,[2] wife of Richard Lechmere, lived in the Riedesel house[3]; his wife's aunt Rebecca,[2] wife of Judge Joseph Lee, lived in the house which bears his name; his wife's aunt Susanna,[4] wife of Captain George Ruggles, lived in the house now known as the Fayerweather house; and his wife's aunt Anna,[4] wife of John Borland, lived in the Plympton house.

This delightful association of old time Tory aristocrats is thus described by Baroness Riedesel in her letters. "Never had I chanced upon such an agreeable situation. Seven families,

[1] Penelope, daughter of Isaac Royall, Senior, of Medford, and half sister of Mrs. Robert Oliver of Dorchester. (Paige, p. 675.)

[2] Mary and Rebecca, daughters of Lieut.-Gov. Spencer Phips, therefore sisters of Mrs. John Vassall, Senior. (Paige, p. 627.)

[3] In front of the original site of this house stand some superb European lindens, perhaps the oldest and finest specimens of their species in the country.

[4] Susanna and Anna, daughters of Major Leonard Vassall and therefore sisters of Colonel John Vassall, Senior. (Harris, p. 119.)

who were connected with each other, partly by the ties of relationship and partly by affection, had here farms, gardens, and magnificent houses, and not far off plantations of fruit. The owners of these were in the habit of daily meeting each other in the afternoons, now at the house of one, and now another, and making themselves merry with music and the dance — living in prosperity, united and happy, until, alas! this ruinous war severed them, and left all their houses desolate, except two, the proprietors of which were also soon obliged to flee." (Paige, p. 168-9.)

Fuller details in regard to these old houses and their interesting occupants are given in the authorities quoted and other local histories. Especially interesting and complete are the splendid work on the history of Antigua by Oliver, the papers by Harris and Stark, and the very careful, painstaking History of Cambridge by Paige. Mr. J. W. Freese gives a brief account of these and other historic houses in near by towns, fully illustrated by excellent photographic reproductions.

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DESCRIPTION OF PLATES.

PLATE 1. Portrait of Mr. John Richardson, from a daguerreotype taken in Dorchester, 25 September 1851, in the fifty-fourth year of his age. The signature from a manuscript written in 1887. Opposite page 159.

PLATE 2. The Richardson house, built by Robert Oliver in 1745, later the residence of the Everetts, usually known as the Everett house, southwest view, from Boston Street. Taken in 1887. Pages 168, 188.

PLATE 3. The Richardson (Everett) house, barn and fruit-house, southwest view, including the corner of Pond and Boston Streets. Taken in the autumn of 1887. Page 170.

PLATE 4. The Richardson (Everett) house, in summer, the fence has been moved back and some trees cut down as compared with plate 3. A sign board indicates an entrance to Columbia Road, part of the Boston Park System. Taken about 1898. Page 169.

PLATE 5. The Richardson (Everett) house from the northeast, including in the foreground part of the garden. Taken in 1887. Page 170.

PLATE 6. Mr. Richardson's sitting room, the southeast room, the east windows of which (one of these being seen on the right) overlooked the garden. Taken September 1887. Page 170.

PLATE 7. Mr. Richardson's parlor, the southwest room (the windows shown are on the south). The pictures in this room and the sitting room, were painted by Mr. George Richardson. Taken September 1887. Page 170.

PLATE 8. Mr. Richardson's house and garden, from the east. The lower windows belong to the sitting room (Pl. 6), the upper windows to the room where Edward Everett was born. The dining room window, open door to rear hall, and arbor are on the right. Compare with cut, Fig. 10, p. 169. Dahlias are trained against the fence, Ismenes, Iris Sibirica and a peony are on the right of the path. Taken September 1887. Pages 169, 170, 171.

PLATE 9. Richardson seedling peony, *Henry Woodward*. From Country Life in America, September 1904. Page 181.

PLATE 10. Richardson seedling peony, *Milton Hill*. Taken June 1904. Page 182.

PLATE 11. Richardson seedling peony, *Norfolk*. Reproduced from a photograph kindly furnished by Mr. J. Woodward Manning. Page 182.

PLATE 12. Richardson seedling peony, *Samuel Henshaw*. One of the flowers in the lot that received a Silver Medal, June 1904, unfortunately the foliage and stem which are striking features are not shown. Taken June 1904. Page 184.

PLATE 13. Thomas Oliver's house in Cambridge, later the residence of Elbridge Gerry and James Russell Lowell. Taken about 1890. Page 195.

PLATE 14. John Vassall the Second's house in Cambridge, later occupied by Washington, and the long time residence of the poet Longfellow. John Vassall, Second married Elizabeth, daughter of Robert Oliver, who built the Richardson house. Taken in recent years. Page 191.

The lower figure on same plate, is the house of Isaac Royall, Senior in Medford, whose wife was the mother of Mrs. Robert Oliver of Dorchester and grandmother of Thomas Oliver. Taken in recent years. Page 196.

TRANSACTIONS

OF THE

MASSACHUSETTS HORTICULTURAL SOCIETY

FOR THE YEAR 1904

PART II

PUBLISHED BY THE SOCIETY
BOSTON
NINETEEN HUNDRED AND FIVE

TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1904

PART II

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ANNUAL REPORTS FOR THE YEAR 1904.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

1904. PART II.

REPORT OF THE BOARD OF TRUSTEES FOR THE YEAR 1904.

In compliance with the requirement of the By-laws and in order that the members of the Society may be informed of the business transacted by the Board of Trustees during the year, this report is presented.

There have been eleven meetings of the Board during the year with an average attendance of eleven members.

January 1. The Board of Trustees of the Massachusetts Horticultural Society was duly organized with the President, Henry P. Walcott, as Chairman.

William P. Rich was appointed Secretary of the Board and Librarian of the Society, and Charles E. Richardson was appointed Superintendent of the Building.

The following committees were appointed:

Finance: —Walter Hunnewell, Chairman, Arthur F. Estabrook, Henry P. Walcott.

Prizes and Exhibitions: — J. K. M. L. Farquhar, Chairman, William N. Craig, Arthur H. Fewkes, Warren W. Rawson, William H. Spooner, Arthur F. Estabrook.

Plants and Flowers: — Arthur H. Fewkes, Chairman, William N. Craig, T. D. Hatfield, Robert Cameron, James Wheeler, William Nicholson, John A. Pettigrew.

Fruits:—E. W. Wood, Chairman, Charles F. Curtis, Warren Fenno, J. Willard Hill, John Ash.

Vegetables:—Michael Sullivan, Chairman, Warren H. Heustis, Aaron Low, Joshua C. Stone, Walter Russell.

Gardens:—Charles W. Parker, Chairman, David F. Roy, John A. Pettigrew, Warren W. Rawson, Arthur H. Fewkes, Oakes Ames, Patrick Norton, Henry P. Walcott.

Library:—Charles S. Sargent, Chairman, Samuel Henshaw, George E. Davenport, Charles W. Jenks, T. Otis Fuller.

Lectures and Publication:—Aaron Low, Chairman, James H. Bowditch, E. W. Wood, Robert T. Jackson, Edward B. Wilder.

School Gardens and Native Plants:—Henry L. Clapp, Chairman, Katharine W. Huston, William E. C. Rich, William P. Rich, Charles W. Jenks, Mary Rodman, Henry S. Adams.

Mr. Farquhar, Chairman of the Committee on Prizes and Exhibitions, called attention to the main points of the new Schedule of Prizes which had been arranged very much as in the previous year. The principal changes were the consolidation of the January and February, and the September and October exhibitions. Many smaller prizes had been cut out for things unimportant or obsolete. He recommended the restoration of the Lowell Medal, to be awarded only by the Fruit and Vegetable Committees, and the Appleton Medal, to be awarded only by the Plant and Flower Committee. It was voted to adopt the report of the Committee on Prizes and Exhibitions and also the recommendations concerning the Lowell and Appleton Medals.

Mr. Farquhar suggested the advisability of the appointment of some competent person to take charge of the arrangement of the various exhibitions of the Society and asked for authority to employ such extra assistance. On motion of Mr. Spooner it was voted that a sum not exceeding $250.00 be placed at the disposal of the Committee on Prizes and Exhibitions for the purpose stated by Mr. Farquhar.

On motion of Mr. Spooner it was voted that $400.00 be appropriated for the library for the present year, in addition to the income of the French and Farlow Funds, and that $150.00 be appropriated for the Committee on School Gardens and Native Plants.

On motion of Mr. Estabrook it was voted to authorize the Chairman of the Finance Committee to give a written order to the Treasurer for the payment of prizes and gratuities and other bills of the Society, in accordance with the provisions of clause (c), Section VI, of the By-laws.

It was voted also, on motion of Mr. Estabrook, that authority be given the Treasurer to draw checks on the funds of the Society on deposit, in accordance with the provisions of clause (k), Section VI.

On motion of Mr. Estabrook it was voted that the salary of the Treasurer be $1,500.00 for the current year and that he furnish bonds satisfactory to the Finance Committee for the amount of $25,000.00, the expense of the same to be paid by the Society.

At this meeting the subjects of the need of electric lamps at the entrance to the building, the improvement of the acoustic properties of the halls, and the present condition and needs of the library were severally considered and referred to committees for future report.

January 2. The committee appointed to consider the matter of salaries of committees and refreshments reported through its Chairman, Mr. Rawson, as follows:

The committee recommends that the Chairman of the Plant and Flower Committee be paid $150.00 annually for his services and that the Chairman of the Fruit Committee and the Chairman of the Vegetable Committee be paid each $100.00 annually, and that they be instructed to make a complete report of their several departments.

Every member of the above-mentioned committees, excepting the chairman, to be allowed two dollars each at the four large exhibitions and one dollar each at all other exhibitions, and no dinner tickets are to be given any committee.

No member of a committee to receive this fee unless present at the meeting of the judges.

Any member of a committee coming from a distance will be entitled, on application to the chairman and on his approval, to receive the amount of his car fare.

The Committee on Gardens will receive the amount of its car fares and necessary expenses.

The committee recommends also that the sum of $100.00 be appropriated to be used for refreshments under the direction of the Chairman of the Committee on Prizes and Exhibitions.

It was voted to adopt the recommendations of the committee.

On motion of Mr. Farquhar it was voted to extend an invitation to the Chrysanthemum Society of America to hold its annual exhibition in the halls of the Massachusetts Horticultural Society in connection with the Chrysanthemum Show of November 3-6.

February 13. Arthur D. Hill was elected a member of the Board to fill the vacancy existing by reason of Mr. Hill's ineligibility at the annual election by the Society.

The following-named candidates, having become eligible in accordance with the provisions of Section XVI of the By-laws, were elected to membership in the Society:

S. King Bayley of Belmont, proposed by Warren H. Heustis,
Joseph Thorpe of Taunton, proposed by Warren H. Heustis,
James Nicol of Quincy, proposed by Joseph H. Woodford,
Philip Dexter of Beverly, proposed by Walter Hunnewell,
Rev. Charles Lewis Hutchins of Concord, proposed by Francis H. Appleton,
Dr. Joseph S. Goodale of Boston, proposed by Robert T. Jackson,
Arthur Clark of East Weymouth, proposed by Charles E. Richardson.

It was voted to extend invitations to the Rose and Carnation Societies of America to hold their annual exhibitions for 1905 in the halls of this Society.

March 12. The following-named candidates were elected to membership in the Society:

Samuel S. Symmes of Winchester, proposed by Charles E. Richardson,
Arthur F. Barney of Dorchester, proposed by Frederick S. Davis,
Henry M. Howard of West Newton, proposed by E. W. Wood.

April 2. Mr. Farquhar, Chairman of the Committee on Exhibitions, reported that the receipts from the recent Spring Show were $596.50 and the payments $255.62, leaving the net proceeds $340.88; a much larger amount than that for the previous year.

May 7. A communication from Henry Lincoln Clapp was read containing his resignation as a member of the Committee on School

Gardens and Native Plants. It was voted to accept the resignation of Mr. Clapp and to express to him the appreciation of the Society for his valuable services on that committee during the past fourteen years.

Appropriations were voted of $200.00 for special prizes at the Annual Exhibition of the Chrysanthemum Society of America in November, and an amount not exceeding $700.00 for additional exhibition glassware.

It was voted to authorize the Committee on Prizes and Exhibitions to issue a Preliminary Schedule of Prizes for the Spring Exhibition of 1905, it being understood that said schedule is to be recommended by the Board of Trustees for adoption by the Society at the Annual Meeting in November, 1904.

This action was necessary in order that certain portions of the schedule might be known beforehand to intending exhibitors.

On motion of Mr. Fewkes it was voted to extend an invitation to the American Peony Society to hold its next annual meeting in the building of the Massachusetts Horticultural Society, in connection with the Peony Exhibition of June 11, 1904.

The following-named candidates were elected to membership in the Society:

Philip W. Moen of Worcester, proposed by William P. Rich,
R. William E. Vining of Hingham, proposed by Aaron Low.

June 25. Mr. Estabrook, on behalf of the Finance Committee, reported a plan for placing four electric lamps at the main entrance to the building with an estimate of the cost of the same, and the committee was authorized to provide the lamps in accordance with the plan presented at an expense not exceeding $810.00.

Mr. Farquhar called attention to the fact that at the recent Rhododendron Exhibition of this Society we were largely indebted for its success to the very liberal contributions of flowers from the estate of Mr. Walter Hunnewell of Wellesley, and he therefore moved and it was heartily voted that the thanks of the Society be presented to Mr. Hunnewell for his generous contribution of rhododendrons on that occasion.

The following-named candidates were elected to membership in the Society:

A. Leuthy of Roslindale, proposed by David Lumsden,
Edward MacMulkin of Boston, proposed by Arthur H. Fewkes,
Allan V. Garratt of Brookline, proposed by William P. Rich.

July 23. On motion of Professor Sargent appropriations for the library were voted as follows:

For alterations in the shelving, in accordance with a plan presented by the architects, Wheelwright & Haven, $450.00.

For an additional card-catalogue case, $74.00. For binding pamphlets, $100.00.

Mr. Spooner spoke of the damage that is being done by the San José scale, gypsy and brown-tail moths, and moved that this Society hold a public demonstration for the purpose of exhibiting in some convenient place approved methods for the destruction of these pests. It was voted that the matter be referred to the Committee on Gardens with full power to hold such a field meeting for the purpose stated.

The following-named candidates were elected to membership in the Society:

Gordon Dexter of Boston, proposed by Charles S. Sargent,
Alfred D. Chandler of Brookline, proposed by Charles W. Parker,
Louis Preston Hollander of Boston, proposed by Charles W. Parker,
Mrs. J. Bertram Williams of Cambridge, proposed by Robert T. Jackson,
George Barker of Swampscott, proposed by C. E. Richardson,
N. Allen Lindsey of Marblehead, proposed by Charles W. Parker,
Samuel C. Lawrence of Medford, proposed by A. F. Estabrook,
Joseph Balch of Dedham, proposed by A. F. Estabrook,
Leander M. Haskins of Rockport, proposed by Charles W. Parker.

October 1. An additional appropriation of $122.00 was voted on account of the alterations in the library shelving and an appropriation of $200.00 was voted for the entertainment of the Chrysanthemum Society of America at its approaching annual meeting in Boston.

Mr. Estabrook, for the committee on improvement of the acoustics of the lecture hall, reported a recommendation that the windows be provided with metallic weather strips and that double windows be put on. He moved and it was voted that $440.00, including the architects' commission, be appropriated for this purpose.

Mr. Spooner suggested the desirability of a change in the Charter of the Society in regard to the method of election of a Treasurer and a Secretary and recommended that a petition be presented to the Legislature for such amendment as may be necessary to place the election of these two officers in the hands of the Board of Trustees. It was voted to refer the matter to the next meeting of the Society.

Mr. Parker reported that arrangements were being made by the Committee on Gardens to hold a public meeting in November to demonstrate methods and apparatus for the destruction of insect pests in accordance with the vote of the Board passed July 23, 1904.

The following-named candidates were elected to membership in the Society:

Theodore Frank Borst of Brookline, proposed by James H. Bowditch,

John Hays Gardiner of Brookline, proposed by Robert T. Jackson,

Edmund Q. Sylvester of Hanover, proposed by J. K. M. L. Farquhar.

November 5. The report of the special committee appointed to consider the appropriations for prizes and gratuities for the year 1905 was acted upon at this meeting and it was voted to recommend to the Society for its approval at the Annual Meeting the following amounts:

For Plants and Flowers	$3,731.00
" Fruits	1,275.00
" Vegetables	900.00
" Gardens and Greenhouses	375.00
" School Gardens and Native Plants	225.00
A total of	$6,506.00

The present Committee on Prizes and Exhibitions was authorized to proceed with the preparation of the Schedule for 1905, and the present Committee on Lectures was authorized to proceed with the preparation of a course of lectures for the ensuing year and an appropriation of $200.00 was voted for that purpose. It was voted to grant the use of Horticultural Hall to the Gardeners' and Florists' Club for its meetings during the year 1905; the said Club to pay the cost of janitor's service and of lighting. It was voted also to invite the Boston Coöperative Flower Market Association to hold its February exhibition in the halls of this Society and to extend an invitation to the Carnation Society of America to hold its annual meeting for 1906 at Horticultural Hall, Boston.

The following-named candidates were elected to membership in the Society:

Oliver Hazard Perry of Lowell, proposed by William P. Rich,

Duncan Finlayson of Jamaica Plain, proposed by William N. Craig,

John F. Sharkey of North Cambridge, proposed by C. E. Richardson.

December 10. Mr. Hill, to whom was referred the matter of a change in the Charter of the Society concerning the election of the Treasurer and Secretary, reported a petition and a draft of an amendment to be presented to the Legislature, providing for the appointment of these officers by the Board of Trustees. The report of Mr. Hill was accepted and it was voted to present the petition and bill to the Legislature.

The following committees were appointed for the ensuing year:

Finance:—Walter Hunnewell, Chairman, Arthur F. Estabrook, George F. Fabyan.

Library:—Charles S. Sargent, Chairman, Samuel Henshaw, Charles W. Jenks, Henry P. Walcott, T. Otis Fuller.

Lectures and Publication:—J. Woodward Manning, Chairman, James H. Bowditch, Robert T. Jackson, E. W. Wood, Edward B. Wilder.

Prizes and Exhibitions:—J. K. M. L. Farquhar, Chairman, Wm. N. Craig, Arthur H. Fewkes, Warren W. Rawson, Wm. H. Spooner, John A. Pettigrew.

Plants and Flowers:—Arthur H. Fewkes, Chairman, Wm. N. Craig, Robert Cameron, Wm. Nicholson, James Wheeler.

Fruits:—Warren Fenno, Chairman, Charles F. Curtis, J. Willard Hill.

Vegetables:—Warren W. Rawson, Chairman, Warren H. Heustis, Joshua C. Stone.

Gardens:—Oakes Ames, Chairman, George Barker, Wm. N. Craig, Arthur H. Fewkes, Charles W. Parker, John A. Pettigrew, Wm. P. Rich, Henry P. Walcott.

School Gardens and Native Plants:—Henry S. Adams, Chairman, Charles W. Jenks, Wm. E. C. Rich, Wm. P. Rich, Miss Mary Rodman.

The following-named candidates were elected to membership in the Society:

Mrs. Emma Mayer Keyes of Boston, proposed by Harold J. Coolidge,

John Woodbury of Lynn, proposed by Charles S. Sargent,

Elbridge Torrey of Dorchester, proposed by Edward B. Wilder,

Archie Howard Kirkland of Reading, proposed by Charles W. Parker,

Miss Lucy Lowell of Boston, proposed by Miss Mary Rodman.

WILLIAM P. RICH, *Secretary.*

REPORT OF THE COMMITTEE ON PRIZES AND EXHIBITIONS FOR THE YEAR 1904.

BY JOHN K. M. L. FARQUHAR, CHAIRMAN.

During the year 1904 the usual exhibitions of the Society have been held. The aim of the committee has been to improve the quality of the exhibitions by creating greater interest in them and giving all possible encouragement to those contributing to their success.

When the committee entered upon its work it found that the supply of glass vases for cut-flower exhibits was insufficient and that on several occasions valuable exhibits were lost to the Society because intending exhibitors had been unable to find vases in which to stage the material they had brought to the hall, causing them keen disappointment. A recurrence of this annoyance will not be probable for several years at least as a large number of vases have been purchased, and at better prices than the Society had previously paid for the same quality of glassware.

A decided improvement has been made in the purchase of a supply of paper for covering the exhibition tables. Formerly a white paper had been used which became soiled very quickly and had to be renewed once or twice during an exhibition. The new paper, which in color is a medium shade of natural green, lasts through the exhibition without becoming unsightly and forms a much more pleasing ground for plants and flowers than the white paper formerly used.

At the larger shows there is great difficulty in properly arranging groups of flowering plants in the two exhibition halls because of the red color of the walls. For the Chrysanthemum Exhibition a background of evergreen boughs was arranged against the walls with pleasing effect.

At the beginning of the year a system of exhibitor's entry cards was adopted and entries are now generally received several days before the opening of each show, which is most helpful in arranging the halls.

A card catalogue of exhibitors has been established which will enable the committee to communicate with those competing in any particular class or at any exhibition. Correspondence, soliciting or encouraging exhibits will undoubtedly be a means of increasing their number.

Financially the exhibitions of 1904 show a satisfactory gain over those of the previous year, as may be seen from the Treasurer's report; nevertheless, there is good reason to believe that greater public interest may be aroused in our exhibitions and that the receipts from visitors may be largely increased. To accomplish this the exhibitions must be of highest excellence. Boston has so many floricultural advantages that abundance of material is readily obtainable, provided an attractive list of prizes is offered.

The exhibitions of the Society constitute its most important work for the advancement of horticulture not only in the vicinity of Boston but throughout the country. That they have already done more to this end than those of any other American society is evidenced by the advanced condition of horticulture in this locality and by the high estimation in which the Society's awards are everywhere held; many exhibitors now coming from New York, Philadelphia, Chicago and other distant places to obtain them.

JOHN K. M. L. FARQUHAR,
WILLIAM N. CRAIG,
ARTHUR F. ESTABROOK,
ARTHUR H. FEWKES,
WARREN W. RAWSON,
WILLIAM H. SPOONER.

Committee on Prizes and Exhibitions.

REPORT OF THE COMMITTEE ON PLANTS AND FLOWERS FOR THE YEAR 1904.

BY ARTHUR H. FEWKES, CHAIRMAN.

The present year marks the return to earlier methods of caring for the exhibits of Plants and Flowers. Up to the year 1891 they were judged by one and the same committee but for several years previous the annual increase in exhibits had been so large that it was finally decided, as a means of facilitating the work, to try the experiment of making two distinct committees, one for the Plants and one for the Flowers.

Undoubtedly the judging was more quickly done by dividing the work of one committee between two, but beyond this there was little gain and the method proved a disadvantage by causing a lack of uniformity in making awards; each committee worked independently and made special awards without reference to what had been done by the other, thereby causing confusion in the awarding of medals and certificates.

It is important that the work should be done with system, and this is possible only where the awards are made by one committee, the members of which are thoroughly conversant with the work that has already been done as well as with that to be done.

A year's trial seems to prove the wisdom of the change although the work has been materially increased, causing considerable delay in the giving out of the prize cards, particularly at the larger shows. This matter is under consideration and will be rectified as soon as some practicable method can be decided upon.

As a whole the exhibitions of the year have been a success, particularly the four large ones. The weekly shows have not been so large or so well attended as in some former years but the quality of the exhibits has seldom, if ever, been better. Whatever the cause may be it seems unfortunate that the interest in the weekly shows should decrease, for they are in direct line with some of the most important work of the Society.

It is true the large exhibitions tend to create a general interest in horticulture, produced by the grand displays of carefully grown

plants and flowers arranged for spectacular effect; but by the very magnificence of these a deterring influence is often exerted rather than an encouraging one; for these shows are preëminently displays of the productions of professionals and past-masters in the art of horticulture; and it is in this light they must be considered.

The weekly shows have a distinct value inasmuch as they furnish opportunities for the small grower, the amateur, and the specialist to make displays of such flowers as they grow and at such times as are most favorable to them. Many beautiful and interesting flowers would never appear on the exhibition tables if it were not for these shows.

The first prize show of the year was held on January 30 and proved a very successful one. Cut orchids from the F. L. Ames Estate, J. E. Rothwell, and Mrs. John L. Gardner made a very important feature, the three collections filling over five hundred bottles. Begonia Gloire de Lorraine was remarkably well shown by R. and J. Farquhar & Co. and Mrs. J. Montgomery Sears.

There were fine displays of *Primula Sinensis* from E. J. Mitton, E. W. Breed, and Mrs. John L. Gardner; the latter also showing fine plants of *Primula stellata* and *Primula obconica*. The Harvard Botanic Garden contributed some very finely grown specimens of *Chorizema ilicifolium* and a beautiful new acacia, *Acacia Baileyana*.

With the exception of orchids the cut flowers were not numerous and there was no competition in the classes for carnations.

A seedling orchid, *Lœliocattleya Maxcina*, from E. O. Orpet was shown for record only. It was the result of a cross between *Cattleya maxima* and *Lœlia cinnabarina*.

The Spring Show, March 24, 25, 26, and 27, was a remarkably fine display of plants and flowers skilfully arranged. The main exhibition hall was filled principally with the plant exhibits; the cyclamens filling the foreground backed by the displays of palms and rambler roses, and flanked by miscellaneous groups of bulbous plants, *Primula obconica*, and foliage plants. The display of hybrid Hippeastrums from Walter Hunnewell was a most attractive one, filling a large table at the right of the loggia steps. They were principally seedlings but many of them were magnificent flowers of mammoth size and fine colors. As these plants are

naturally without foliage when in bloom, plants of *Cyrtomium falcatum* were interspersed among them giving a fine effect.

An unusual feature and one well worth encouraging was the display of Easter Plants from Louis Dupuy, Whitestone, L. I., his Ericas being specially noticeable.

The displays of seedling rambler roses from M. H. Walsh have become one of the most important features of our Spring Shows and his exhibit this year excelled all previous efforts. His group included magnificent plants of Sweetheart, Lady Gay, Minnehaha, Hiawatha, La Fiamma, and Wedding Bells. Special mention should be made of the displays of cyclamens, which it is safe to say have never been equaled before in this country.

The lecture hall was devoted mostly to cut flowers and to the displays of forced hardy plants and shrubs from the Bussey Institution.

There were very few entries in the rose classes but the displays of carnations were more numerous than usual. Cut orchids were shown by W. P. Winsor and Col. Charles Pfaff, their displays including many rare species and varieties.

The May Exhibition, May 7, was not extensive but the plants entered in the class for calceolarias were finely grown specimens. There was also a very comprehensive diplay of spring garden flowers from the Harvard Botanic Garden.

An unusual exhibit was made by Walter Hunnewell, who showed some very fine plants of *Acuba Japonica fœmina*, well ladened with scarlet fruit.

There were but few Pelargoniums shown but these were well grown plants.

The Rhododendron Exhibition, June 4–5, was more than ordinarily good, filling the lecture hall and loggia.

The principal displays of rhododendrons were from Walter Hunnewell and Mrs. John L. Gardner. Considering the severe winter preceding it was somewhat surprising to see so fine displays of these flowers. German irises were shown in large numbers and in fine condition. The displays of cut, hardy, ornamental trees and shrubs were likewise numerous and made an interesting part of the exhibition.

Mr. Cameron from the Harvard Botanic Garden brought in a remarkably fine display of hardy, herbaceous flowers, labeled with

the care and accuracy for which his displays are noted. The smaller displays were quite numerous and all of good quality, helping much to make this show a most successful one.

The Peony Show, June 11, was not altogether successful owing to the backwardness of the season. The principal class calling for thirty or more varieties of herbaceous peonies was not competed for and was consequently carried over to the Rose Show, June 21–22. There were several small displays not in competition including a number of new varieties never before shown here, some of them native seedlings.

As an exhibition the Rose and Strawberry Show must be considered one of the most successful of the year. Although roses were largely shown the quality was not as good as we have seen in former years. The competition was more spirited than it has been for several years and gave promise of a revival of interest in this old-time favorite.

The peony prizes held over from the Peony Show were competed for with much enthusiasm and made with the displays not in competition the finest display of these flowers ever shown in this country. There were many varieties shown which ordinarily are too late for the regular Peony Show and as nearly all of the most magnificent varieties are among the late ones the public was treated to such a display of these flowers as it seldom has the privilege of viewing.

One of the most noteworthy exhibits was made by Dr. R. T. Jackson who placed on exhibition nearly the entire collection of seedlings raised by the late John Richardson. Some of these were on exhibition for the first time and were given special awards. The varieties shown were, Dorchester, Francis B. Hayes, Grandiflora, H. A. Hagen, Henry Woodward, Isaac Lea, John Richardson, Milton Hill, Norfolk, Paul Fischer, Richardson's Perfection, R. P. Whitfield, Rubra Superba, Samuel Henshaw, and Walter Faxon. These with the varieties George B. Sowerby, Charles Sedgwick Minot, and Ferdinand Stoliczka shown June 11 comprise the entire collection. As most of the varieties of peonies are of European origin it is interesting to know that out of the eighteen varieties raised by Mr. Richardson, ten have received either medals or certificates.

The prizes offered at the weekly shows between the Rose Show and the Annual Exhibition were nearly all competed for and the quality of the exhibits was remarkably good. There were many exhibits entered which were not in competition, among them being several of great value and interest. As most of them received special awards they will be passed over here and given special attention further on.

The Annual Exhibition, Sept. 22–23–24–25, was one of the best on record, the main hall being filled with displays of well-grown plants effectively arranged. Particularly fine were the plants from the Harvard Botanic Garden, several of which were so well grown that special honors were awarded them.

In many of the classes the competition was very good. The Hunnewell prize for hardy, coniferous trees was among those not competed for which was a distinct loss to the exhibition. It is several years since there have been entries in this valuable class, which is to be regretted as the displays are always interesting and instructive. A revival of interest in these prizes is much to be desired.

In the cut flower classes competition was quite spirited, particularly in dahlias. The quality was not up to the standard but this was principally due to the late date of the exhibition and the occurrence of frost the night before the opening day. There seems to be a great revival of interest in these beautiful flowers, occasioned no doubt by the introduction of the Cactus varieties, which were largely shown and received as usual the most attention from visitors.

The displays of gladioli were very meager owing probably to to the late date of the exhibition and the same can be said of China asters.

Although this show was considerably later than usual there was a fine display of aquatic plants and flowers; Bayard Thayer and H. A. Dreer both contributing large collections.

The Chrysanthemum Show, November 3–4–5–6, although a decided success and in many ways superior to all our former exhibitions of this flower, was in some respects a disappointment. It was held in conjunction with the exhibition of the Chrysanthemum Society of America and great effort was made to make this

the best exhibition of its kind on record. In this the management succeeded remarkably well, but with few exceptions the Chrysanthemum Society failed to materialize and their absence, while not detracting materially from the general effect, was nevertheless keenly felt.

Though small in number the exhibits in competition for the prizes offered by the Chrysanthemum Society of America were remarkably fine, particularly those shown by William Duckham, gardener to Dr. Willis James. These were considered to be by far the largest and most perfect specimens ever shown in Boston.

A very remarkable display was made by Charles Totty of Madison, N. J., who placed on exhibition a collection of undisseminated varieties from W. Wells & Co., Earlswood, Surrey, England. The entire collection had previously been shown at the Royal Horticultural Society's exhibition in London, October 19. After being shown there they were packed and shipped across the Atlantic to Boston. They were in fine condition, nearly as good as those from local growers.

These varieties were mostly of Australian origin and included many distinct varieties which, undoubtedly, will be largely grown when disseminated.

It is worthy of note that the largest number of really good new varieties are now coming from Australia through the above-mentioned firm.

The competition for the prizes offered by the Massachusetts Horticultural Society was mostly confined to the larger classes for blooms on long stems.

Although interesting and adding much to the attractiveness of the show it seems very difficult to bring out collections of flowers which represent the many existing classes and it is to be regretted that about all of the interest among growers seems to be centered in the large varieties of practically one class.

The special prizes offered for carnations brought out a fine display and this feature should receive more attention at future chrysanthemum shows as it gives more variety to the exhibition.

The plants exhibited were of the usual high standard and the several collections were so nearly equal in quality that judging them proved to be quite difficult.

Although the entries in the class for groups arranged for artistic decorative effects were better than usual the real artistic idea seems not to be understood and leaves much to be desired.

The general arrangement of the main hall was good, the use of evergreen boughs and autumn foliage making a splendid background for the displays and relieving the monotony of the red brick walls.

One of this committee's most important duties, or perhaps the most in its far-reaching influence, is the giving of special awards. Under this head are included Medals, Certificates of Merit, and Honorable Mention. We have found it advisable to make many of these awards during the year, a description of which follows in consecutive order.

The first award of this nature was a First Class Certificate of Merit given to Robert Cameron, gardener of the Harvard Botanic Garden, on January 30, for *Acacia Baileyana*, a new species of a beautiful deep yellow color, in the way of *A. cultriformis*.

On this same date W. B. Arnold of Rockland was awarded a First Class Certificate of Merit for his variegated sport from carnation Mrs. T. W. Lawson. This is a very pleasing flower with pure white ground, striped with the pink color of its parent, and retains all the good qualities which have made that variety famous.

At the Spring Show, March 24–27, M. H. Walsh was awarded First Class Certificates of Merit for new seedling rambler roses, Wedding Bells and Babette; the former a very free flowering, double, light pink variety and the latter a much deeper shade, smaller, and with more rounded petals.

Julius Roehrs was awarded Honorable Mention for a new fan palm, *Livistona Woodwardii*, and Louis Dupuy, a First Class Certificate of Merit for *Hydrangea hortensis rosea* with very deep rose-pink flowers, the foliage and habit much like the old variety Thomas Hogg.

E. O. Orpet was awarded a First Class Certificate of Merit for a handsome new hybrid orchid, *Cattleya* × *Katherine*, (*C. Warneri* × *Schroderæ alba*), and F. R. Pierson Co., a First Class Certificate of Merit for their new fern, a sport from *Nephrolepis Piersoni*, with shorter and more finely divided fronds and more compact habit.

First Class Certificates of Merit were awarded also to F. R. Pierson Co., for White Lawson, another sport from the carnation Mrs. T. W. Lawson, and to A. Roper for seedling Carnation Chester Roper.

Honorable Mentions were awarded L. E. Small for seedling carnation Number 3, S. J. Goddard for seedling carnation Helen Goddard, a beautiful cerise-pink, and John N. May for new, red forcing Rose Gen. McArthur.

At the May Show, May 7, George F. Fabyan was awarded Honorable Mention for a seedling, Fancy Pelargonium, Miss Henderson, with handsome, lavender colored flowers, blotched with deep crimson.

J. E. Rothwell was awarded a First Class Certificate of Merit for an interesting seedling orchid, *Lælia* × *Latona*, (*L. cinnabarina* × *L. purpurata*).

L. E. Small again showed his seedling, white carnation, Number 3, previously shown at the Spring Show and then awarded Honorable Mention. The variety was shown this day in such fine form that a further award was made it of a First Class Certificate of Merit.

June 4 Walter Hunnewell made a fine display of rhododendrons for which a Silver Medal was awarded.

Frederic J. Rea was awarded Honorable Mention for new German iris, Her Majesty, and Horatio C. Merriam, the same for new German iris, Madonna alba, both being valuable additions to the German iris.

At the Peony Show, June 11, Prof. R. T. Jackson was awarded First Class Certificates of Merit for the Richardson seedling peonies, Ferdinand Stoliczka and Charles Sedgwick Minot. The former a cream-white flower with broad and rounded guard petals and loose center, the latter a self-colored flower of a beautiful light rose-pink color, with long center petals and projecting guards.

T. D. Hatfield was awarded First Class Certificates of Merit for two seedling peonies, Numbers 1 and 2. The first being a very large, full flower with solid center and broad guard petals of a delicate flesh-color changing to cream-white. The other is similar but less full and marked with carmine in the center.

E. J. Shaylor showed the Kelway peony, Lady Alexandra Duff. It is a very large white flower in the way of Festiva Maxima, but with yellowish center marked with red. The center petals are long and broad, intermixed with fine yellow petaloids which give the yellow tinge to the flower.

George Hollis was awarded Honorable Mention for seedling peony, Number 623, a flower of the Japanese type with broad, rosy-crimson guard petals and center of shamois and pink petaloids.

At the Rose and Strawberry Exhibition, June 21–22, E. J. Shaylor was awarded a First Class Certificate of Merit for Lemoine's new peony, Mme. Emile Lemoine, a very large, full flower with broad petals, intermixed with a few stamens. The color is a delicate, creamy white throughout, slightly tinged with pink. He was also awarded a First Class Certificate of Merit for Crousse's new peony, Marguerite Gerrard, a very large and very full, deep flower, beautiful creamy blush in color and broad petaled.

George Hollis was awarded First Class Certificates of Merit for new seedling peonies, Mary Louise Hollis and Sunrise. The former a very large, full flower with long petals, color clear rose with lighter center. The latter is of the Japanese Anemone type, with clear, rose-pink guard petals and yellow center.

A. H. Fewkes was awarded a First Class Certificate of Merit for Crousse's white peony, Avalanche, a large, full flower with broad, shell-shaped guard petals and long center petals.

Prof. Robert T. Jackson was awarded First Class Certificates of Merit for the Richardson seedling peonies, John Richardson and Walter Faxon, the first a very large and full, somewhat flat flower, with long petals, clear deep rose-pink in color. The latter also large and full, with long petals of a beautiful deep flesh, tinged with salmon, the color being very clear and pure.

He was also awarded a Silver Medal for the variety Samuel Henshaw of the same origin, a plant of remarkably strong and vigorous habit, gigantic flowers with petals of various lengths but full in form. The guard petals are deep rose in color, the center creamy white shaded with rose.

George Hollis was awarded Honorable Mention for six other seedling peonies, as follows: Beauty's Mask, deep rose tinged

white; Number 732, 1904, deep lilac-pink; Number 279, 1902, clear salmon-flesh throughout, very promising; Number 181, 1902, rosy-white; Number 986, 1904, delicate flesh, lighter in center, very promising; Number 491, 1903, Japanese Anemone form, deep crimson-rose guard petals, the center petaloids crimson, tipped yellow.

Besides the special awards made to peonies at this show there were several for other flowers. Mrs. Harriett R. Foote was awarded a Bronze Medal for a fine collection of tea and hybrid-tea roses grown in the open air at Marblehead. The collection comprised forty-five varieties.

Honorable Mention was awarded to Walter Hunnewell for a very distinct, unnamed Campanula from Siberia with large, greenish-white, drooping flowers.

The new seedling rose, Minnie Dawson, from Jackson Dawson, was awarded a First Class Certificate of Merit. It is a double flower of the *multiflora* type and is a cross between *Rosa multiflora* and *Rosa alba*.

Another seedling rose by the same exhibitor, but without name, is a cross between *R. Wichuraiana* and *Triomphe de Luxembourg*. It has a creeping habit, glossy green leaves, and large, deep pink flowers with lighter centers. This is a promising rose and was awarded Honorable Mention.

July 9 J. E. Rothwell exhibited a new seedling Cypripedium, Mrs. J. E. Rothwell, for which he received a First Class Certificate of Merit. It is a cross between *C. almum* and *C. niveum*. The lip is white, shaded deep rose, sepals and petals shaded rose and spotted black. He was also awarded Honorable Mention for *Cypripedium Burbidgeanum*, (*C. Dayanum* × *C. concolor*). In this the lip is greenish-white, shaded rose, sepals and petals shaded and veined the same.

The new sweet pea, Scarlet Gem, was shown by the F. L. Ames Estate. It is a great improvement in reds and was awarded Honorable Mention.

July 16 the double tuberous begonias, Gold of Ophir and *Grandiflora erecta cristata*, were shown by H. H. Rogers and received Honorable Mention.

Honorable Mention was also awarded the F. L. Ames Estate

FARQUHAR'S CHRISTMAS LILY,
LILIUM PHILIPPINENSE, BAKER.

for three new sweet peas; White Wonder, a fine large white; King Edward VII., rich red; and Dorothy Eckford, a large white. On July 23 W. A. Manda showed several plants of *Lælia elegans*, among which the varieties Mrs. George Schlegel and Number 200 were selected as worthy of special mention and were awarded Honorable Mention. The former is a white flower with purple lip, veined darker, and the latter a purple flower, tinged buff with deep purple-crimson lip.

Honorable Mention was also awarded to Edward Kirk of Bar Harbor, Maine, for a seedling hardy carnation. It is very bright scarlet in color and of much promise in its class.

August 6 the Blue Hill Nurseries exhibited two promising herbaceous phloxes for which Honorable Mention was awarded; one red, Number 17, and the other pink, Daybreak.

William N. Craig also showed a fine seedling phlox, Number 3, and was awarded Honorable Mention for it.

The F. L. Ames Estate exhibited specimens of the new hardy herbaceous plant *Rehmannia Angulata*, a handsome, strong-growing plant of much promise, for which a First Class Certificate of Merit was awarded.

The new white, bush Dolichos was exhibited by F. S. Davis and received Honorable Mention.

On this same day probably the most important and valuable new plant of the year, and we will venture to predict for many years to come, was shown by the R. & J. Farquhar Co. who placed on exhibition their Christmas Lily, *Lilium Philippinense*. Although this species was introduced several years ago by the Messrs. Veitch of London, it was in small numbers and practically disappeared. As reintroduced by the Farquhars this lily seems to differ somewhat from the original species as introduced by Veitch. It comes from the district of Benguet in the Philippine Islands and as it grows naturally at a high altitude it may prove hardy. In fact, the first shipment received by them remained in a frozen condition for several months after arrival without the slightest injury. But whether it is hardy or not, unless all signs fail, this lily is destined to revolutionize the Easter lily business. The bulbs as received by the Farquhars were of very small size, not more than half an inch in diameter, and badly dried; yet

these same bulbs in from six to eight weeks' time produced stems averaging two feet in height with from one to three magnificent, gardenia-scented blooms, eight inches to ten inches and, on some of the strongest bulbs, twelve inches in length. They are the purest white in color, of the *longiflorum* type, but much longer in proportion, the tube being very narrow and graceful. The stems are wiry, amply sustaining the large flowers.

The leaves are very narrow and numerous and are, perhaps, its only fault, if fault it can be considered, for they are very graceful and enhance the beauty of the plant except when grown as a single specimen.

The committee considering this worthy of the highest award given by the Society placed upon it the Society's Gold Medal.

On August 13 William Whitman was awarded Honorable Mention for a fine display of new Delphiniums; the Blue Hill Nurseries, a First Class Certificate of Merit for a splendid collection of hardy herbaceous flowers filling one hundred bottles; and the F. L. Ames Estate a Silver Medal for a fine display of orchids.

August 20 Joseph H. White was awarded a First Class Certificate of Merit for the dwarf phlox, *Tapis blanc*. The plant is extremely dwarf in habit, with pure white, finely formed flowers.

Honorable Mention was awarded Lager & Hurrell for a fine display of *Lælia elegans*, and R. & J. Farquhar & Co. the same award for a display of several varieties of *Lilium auratum*.

August 27 Lyman H. Atkins was awarded Honorable Mention for a display of flowers grown in an apartment house back yard. The display was interesting, showing what can be done with common flowers under adverse circumstances.

At the Annual Exhibition, September 22, 23, 24, and 25, the Blue Hill Nurseries was awarded a First Class Certificate of Merit for the beautiful *Kniphofia Pfitzerii*. Although not entirely new this was the first time shown here in fine condition.

The F. R. Pierson Co. again exhibited their new fern which was first shown at the Spring Show and then awarded a First Class Certificate of Merit. It has been named *Nephrolepis exaltata Piersoni compacta*, or the Tarrytown Fern, and was shown in so much better form that a further award was made them of the Society's Silver Medal.

A Silver Medal was also awarded Henry A. Dreer for a fine display of aquatics, unusually good for so late a date. He was also awarded First Class Certificate of Merit for two new varieties of *Nymphœa*, *N. dentata superba* and *N. Zanzibariensis Pennsylvania*. The former is a magnificent pure white flower and the latter an immense bloom of a fine deep lavender-blue color.

Still another sport of *Nephrolepis exaltata* was shown at the Chrysanthemum Show by John Scott, Brooklyn, N.Y., and named by him *Nephrolepis exaltata Scottii*. It is a plant of very compact growth, the fronds being much shorter than the original and much more freely produced. It is graceful in habit and a valuable acquisition. A Silver Medal was awarded him for this.

Honorable Mention was awarded A. M. Davenport for another sport of the Pierson Fern which appeared with him. It is practically the same thing as Pierson's new variety, *compacta*.

The most notable award at this show, a Gold Medal, was given W. Wells & Co., Ltd., Earlswood, Surrey, England, for their display of undisseminated chrysanthemums, a description of which has already been given.

Honorable Mention was awarded S. J. Goddard for his light pink seedling carnation, Number 19; Peter Fisher for a deep crimson seedling, Number 113; J. D. Thompson Carnation Co. for new seedling carnation, Gibson Beauty; M. A. Patten for pink sport from carnation, Mrs. Patten; H. A. Jahn for seedling white carnations, Number 9 and Wild Rose; G. B. Anderson for seedling carnation, Number 10; R. & J. Farquhar & Co. for collection of new imported Japanese chrysanthemums; T. Devoy & Son, Poughkeepsie, N.Y., for new geranium, Telegraph; John Cook, Baltimore, Md., for unnamed seedling white rose; and to Mrs. Philip Dexter, Manchester, Mass., for a white seedling chrysanthemum.

First Class Certificates of Merit were given to Guttman and Weber, New York, for a very beautiful red seedling carnation, Victory; to Waban Rose Conservatories for new seedling rose, The Wellesley, similar to La France in color; Cottage Gardens for seedling carnation, Robert Craig, another beautiful scarlet variety; and to Chicago Carnation Co. for the light pink seedling carnation, Fiancee.

At this same show the Society's Silver Medal was awarded to Sander & Son, St. Albans, England, for their new *Nicotiana Sanderæ*. It is somewhat in the way of *N. affinis*, one of its parents, but is deep pink in color and very floriferous.

November 19 James Garthley was awarded a First Class Certificate of Merit for his seedling anemone-flowered pompon chrysanthemum, Victoria. This is a pretty white flower with yellow center and a decided addition to its class.

During the year a larger number than usual of special awards have been made for superior cultivation of various plants. Careful attention to this matter seems to be producing good results as the general quality of the plants shown improves from year to year. These awards are something more than a mere acknowledgement of a well-grown specimen; they are practically a guarantee of the skill of the grower and consequently of great value to him, for they are never given unless the specimen shows unusual skill in its cultivation. These awards will be found in detail with the general list for the year, which follows.

We have awarded during the year in prizes and money gratuities	$3,348.00
Two Society's Gold Medals	
One Society's Silver Gilt Medal	
Three Appleton Silver Gilt Medals	
Seven Society's Silver Medals	
Four Society's Silver Medals (Cultural)	
Three Appleton Silver Medals	
One Society's Bronze Medal	
Two Appleton Bronze Medals	
Actual cost of above including cases and lettering	258.26
	$3,606.26

We have also awarded thirty-two First Class Certificates of Merit, thirteen Cultural Certificates, forty-four Honorable Mentions, and sixty-three Votes of Thanks.

The following special prizes have also been awarded:

One Kelway Silver Gilt Medal	
One Kelway Bronze Medal	
Sarah B. Fay prizes	$50.00
Gardeners' and Florists' Club prize . . .	50.00
William Nicholson prize	10.00
Patten & Company prize	10.00
Peter Fisher prize	10.00

Five hundred and ninety-two awards of all kinds have been made.

PRIZES AND GRATUITIES AWARDED FOR PLANTS AND FLOWERS.

1904.

JANUARY 2.

Gratuities: —

George F. Fabyan, *Cattleyas* and *Primula obconica*, $8.
Mrs. John L. Gardner, *Primula Sinensis*, $6.

JANUARY 30.

PRIMULA SINENSIS.—Six plants in not less than six-inch pots:
1st, Edward J. Mitton, $6; 2d. E. W. Breed, $3; 3d, Mrs. John L. Gardner, $2.

PRIMULA STELLATA.—Six plants in not less than six-inch pots:
1st, Mrs. John L. Gardner, $6.

PRIMULA OBCONICA HYBRIDS.—Six plants in not less than six-inch pots:
1st, Mrs. John L. Gardner, $6.

FREESIAS.—Vase of fifty sprays:
1st, Mrs. E. M. Gill, $6.

ORCHIDS.—Display of not less than twenty named species and varieties, filling not less than twenty bottles:
1st, F. L. Ames Estate, Appleton Silver Gilt Medal; 2d, J. E. Rothwell, Appleton Silver Medal; 3d, Mrs. John L. Gardner, Appleton Bronze Medal.

VIOLETS.—Best collection of varieties, in bunches of fifty blooms each:
1st, Norris F. Comley, $4; 3d, Col. Chas. Pfaff, $2.

Gratuity:—

Harvard Botanic Garden, *Chorizema ilicifolium*, $5.

Spring Exhibition.

March 24, 25, 26, 27.

Plants.

Theodore Lyman Fund.

Indian Azaleas.—Six named varieties:

1st, Edward W. Breed, $20; 2d, Edward MacMulkin, $15; 3d, J. A. Beebe, $10.

Society's Prizes.

Ericas.—Six, not less than three species:

1st, Louis Dupuy, $8.

Orchid.—Single plant:

1st, W. P. Winsor, $8; 2d, Col. Chas. Pfaff, $5; 3d, Edward J. Mitton, $3.

Climbing Rose.—Specimen plant in bloom:

1st, M. H Walsh, $10; 2d, M. H. Walsh, $6.

Hardy Primroses and Polyanthuses. — Twelve plants of distinct varieties:

1st, William Whitman, $10; 2d, William Whitman, $6; 3d, A. F. Estabrook, $4.

Cyclamens.—Ten plants:

1st, George F. Fabyan, $20; 2d, J. S. Bailey, $15.

Ten plants, in not over seven-inch pots:

1st, George F. Fabyan, $12; 2d, E. A. Clark, $8; 3d, George F. Fabyan, $6.

Single plant:

1st, George F. Fabyan, $5; 2d, Edward J. Mitton, $4; 3d, George F. Fabyan, $3.

Cinerarias.—Six varieties:

1st, Edward J. Mitton, $15; 2d, George F. Fabyan, $10; 3d, Mrs. John L. Gardner, $6.

Three varieties:

1st, Edward J. Mitton, $8; 2d, Mrs. John L. Gardner, $6; 3d, George F. Fabyan, $4.

Hyacinths.—Twelve named varieties, in pots, one in each pot:

1st, E. A. Clark, $10; 2d, Mrs John L. Gardner, $6; 3d, Bussey Institution, $4.

Six named varieties, in pots, one in each pot:

1st, Mrs. John L. Gardner, $5; 2d, Bussey Institution, $4; 3d, Bussey Institution, $3.

Three pans, not to exceed twelve inches, ten bulbs of one variety in each pan:

1st, E. A. Clark, $10; 2d, Mrs. John L. Gardner, $6; 3d, Bussey Institution, $4.

Single pan, not to exceed twelve inches, with ten bulbs of one variety:

1st, Mrs. John L. Gardner, $5; 2d, Bussey Institution, $4; 3d, E. A. Clark, $3; 4th, E. A. Clark, $2.

TULIPS.—Six eight-inch pans, nine bulbs of one variety in each:

1st, E. A. Clark, $8; 2d, Bussey Institution, $6; 3d, Bussey Institution, $4.

Three eight-inch pans, nine bulbs of one variety in each:

1st, E. A. Clark, $4; 2d, Bussey Institution, $3; 3d, Bussey Institution, $2.

Three ten-inch pans, twelve bulbs of one variety in each:

1st, E. A. Clark, $6; 2d, Bussey Institution, $5; 3d, Bussey Institution, $4.

POLYANTHUS NARCISSUS.—Four eight-inch pots, five bulbs in each, distinct varieties:

1st, E. A. Clark, $6; 2d, Bussey Institution, $4; 3d, Mrs. John L. Gardner, $3.

JONQUILS.—Six pots or pans, not exceeding eight inches:

1st, William Whitman, $4; 2d, Mrs. John L. Gardner, $3.

NARCISSUSES.—Six eight-inch pots or pans, distinct varieties, single or double:

1st, E. A. Clark, $10; 2d, Mrs. John L. Gardner, $6; 3d, William Whitman, $4.

Three eight-inch pots or pans:

1st, E. A. Clark, $5; 2d, Mrs. John L. Gardner, $3; 3d, A. F. Estabrook, $2.

LILY OF THE VALLEY.—Six pots or pans, not exceeding eight inches:

1st, E. A. Clark, $4; 2d, Bussey Institution, $3; 3d, Bussey Institution, $2.

CROCUSES.—Three ten-inch pans, three distinct varieties:

1st, Bussey Institution, $4; 2d, Bussey Institution, $3.

ROMAN HYACINTHS.—Six eight-inch pans, ten bulbs in a pan:

1st, E. A. Clark, $5; 2d, Bussey Institution, $3.

AMARYLLISES.—Six pots, distinct varieties:

1st, Walter Hunnewell $10.

GENERAL DISPLAY OF SPRING BULBS AND PLANTS.—All classes:

1st, Bussey Institution, $30.

FLOWERS.

HYBRID PERPETUAL ROSES.—Twelve blooms, in not less than four named varieties:

1st, Col. Charles Pfaff, $10; 2d, Col. Charles Pfaff, $6.

TENDER ROSES IN VASES.—Twelve blooms of American Beauty:
1st, Waban Rose Conservatories, $15; 2d, F. R. Pierson Co., $12.
Twenty-five blooms of any other variety:
1st, Waban Rose Conservatories, Golden Gate, $10; 2d, Waban Rose Conservatories, Ivory, $6.

CARNATIONS.—Vase of one hundred cut blooms, with foliage, not less than six varieties:
1st, William Nicholson, $8; 2d, M. A. Patten, $6; 3d, Wilfrid Wheeler, $4.
Twenty-five blooms of any named Crimson variety:
1st, M. A. Patten, Harry Fenn, $4; 2d, S. J. Goddard, Harry Fenn, $3; 3d, Wilfrid Wheeler, Harry Fenn, $2.
Twenty-five blooms of any named Dark Pink variety:
1st, M. A. Patten, Mrs. T. W. Lawson, $4; 2d, L. E. Small, Mrs. T. W. Lawson, $3; 3d, E. A. & W. K. Wood, Mrs. T. W. Lawson, $2.
Twenty-five blooms of any named Light Pink variety:
1st, Wm. Nicholson, Enchantress, $4; 2d, M. A. Patten, Enchantress, $3; 3d, J. W. Foote, Enchantress, $2.
Twenty-five blooms of any named Scarlet variety:
1st, M. A. Patten, Adonis, $4; 2d, M. A. Patten, Manley, $3; 3d, L. E. Small, Manley, $2.
Twenty-five blooms of any named White variety:
1st, William Nicholson, Governor Wolcott, $4; 2d, H. A. Stevens Co., Governor Wolcott, $3; 3d, M. A. Patten, Boston Market, $2.
Twenty-five blooms of any named Yellow Variegated variety:
1st, M. A. Patten, Dorothy Whitney, $4; 2d, Backer & Co., Eldorado, $3.
Twenty-five blooms of any named White Variegated variety:
1st, E. A. & W. K. Wood, Gaiety, $4.

PANSIES.—Forty-eight cut blooms, not less than twenty-four varieties:
1st, Mrs. E. M. Gill, $3; 2d, John R. Comley, $2.

VIOLETS.—Bunch of one hundred blooms of Lady Hume Campbell:
1st, Norris F. Comley, $3; 2d, Malcolm Orr, $2; 3d, Col. Chas. Pfaff, $1.
Bunch of one hundred blooms of Marie Louise:
2d, Norris F. Comley, $2; 3d, J. Arthur Beebe, $1.
Bunch of one hundred blooms of any other double variety:
1st, Norris F. Comley, Neapolitan, $3; 2d, Norris F. Comley, Swanley White, $2.
Bunch of one hundred blooms of any single variety:
1st, William Sim, Princess of Wales, $3; 2d, Norris F. Comley, Princess of Wales, $2; 3d, Col. Chas. Pfaff, Princess of Wales, $1.

ORCHIDS.—Display of not less than twenty named species and varieties, filling not less than twenty bottles:
1st, W. P. Winsor, Appleton Silver Gilt Medal; 2d, Col. Chas. Pfaff, Appleton Silver Medal.

Gratuities:—

M. H. Walsh, Display of Rambler Roses, $30.
Julius Roehrs, Display of Palms, Foliage Plants, and Orchids, $10.
Louis Dupuy, Display of Hydrangeas, Marguerites, etc., $5.
R. & J. Farquhar & Co., Display of Spring Bulbs and Plants, $20.
Harvard Botanic Garden, Display of *Primula obconica* and Palms, $20.
Edmund W. Converse, Display of Palms, Cyclamen, and *Primula obconica*, $8.
Lager & Hurrell, Display of Orchids, $10.
J. & E. Rothwell, Display of Orchids, $6.
Jason S. Bailey, Dendrobiums, $3.
Bussey Institution, Display of Forced Hardy Shrubs and Herbaceous Plants, $25.
Peter Fisher, Vases of Mrs. Patten and Nelson Fisher Carnations, $5.
M. A. Patten, Vase of Mrs. Patten Carnation, $5.
Mrs. E. M. Gill, Display of Flowers, $3.

MARCH 26.

Gratuity:—

William Sim, Vase of Violet, Princess of Wales, $2.

MAY EXHIBITION.

MAY 7.

PLANTS.

CALCEOLARIAS.—Six varieties in pots:
1st, George F. Fabyan, $15; 2d, E. A. Clark, $10.
PELARGONIUMS.—Six named Show or Fancy varieties in not less than eight-inch pots:
1st, George F. Fabyan, $10.

FLOWERS.

TULIPS.—Forty-eight blooms, not less than twenty-four varieties:
1st, William Whitman, $5.
PANSIES.—Forty-eight blooms, not less than twenty-four varieties:
1st, J. B. Shurtleff, Jr., $3; 2d, Mrs. E. M. Gill, $2.

Gratuities:—

Mrs. E. M. Gill, Display of Tulips, etc., $2.
William Whitman, " " " $2.
Harvard Botanic Garden, Display of Herbaceous Plants and Bulbs, $12.

MAY 14.

Gratuity

W. B. Roberts, *Amaryllis vittata*, $1.

Rhododendron Exhibition.

June 4 and 5.

Flowers.

H. H. Hunnewell Fund.

Rhododendrons.—Twelve distinct varieties, of unquestioned hardiness, named:

1st, Mrs. John L. Gardner, $10.

Six distinct varieties of unquestioned hardiness, named:

1st, Mrs. John L. Gardner, $5.

Twelve tender varieties, named:

1st, Walter Hunnewell, $10.

Six tender varieties, named:

1st, Walter Hunnewell, $5.

Hardy Azaleas.—Twelve varieties, one vase of each:

1st, Mrs. John L. Gardner, $6; 2d, T. C. Thurlow, $4.

Six varieties, one vase of each:

1st, E. P. Shaw, $4.

Cluster of trusses, one variety:

1st, Mrs. John L. Gardner, $3; 2d, T. C. Thurlow, $2.

Society's Prizes.

German Irises.—Thirty-six vases of three trusses each, of not less than twelve varieties:

1st, T. C. Thurlow, $5; 2d, Horatio C. Meriam, $3; 3d, William Whitman, $2.

Hardy Pyrethrums.—Display of thirty bottles, single and double, six or more varieties:

1st, Mrs. John L. Gardner, $5.

Hardy Ornamental Trees and Shrubs.—Display of not less than thirty species and varieties, named:

1st, Mrs. John L. Gardner, $10; 2d, E. A. Clark, $6; 3d, W. H. Heustis, $4.

Gratuities:—

Lager & Hurrell, Display of Orchids, $10.

R. & J. Farquhar & Co., Display of Palms, Azaleas, Rhododendrons, Evergreens, etc., $25.

Harvard Botanic Garden, Display of Fuchsias and *Clerodendron Balfouri*, $10.

Mrs. J. B. Lawrence, Display of Ornamental Trees and Shrubs, $2.

William Whitman, Display of Iris, $2.

Horatio C. Meriam, " " " $2.

Mrs. John L. Gardner, Display of Rhododendrons, $5.

Harvard Botanic Garden, Display of Hardy Herbaceous Plants, $20.
Mrs. J. B. Shurtleff, Jr., Display of Aquilegias, $1.
Mrs. L. Towle, Pansies, $1.
Benj. P. Ware, Display of Tree Peonies, $2.
Mrs. E. M. Gill, Display of flowers, $4.
Mrs. J. B. Lawrence, Herbaceous flowers, $2.
Wm. C. Winter, Display of Rhododendrons, $2.

Peony Exhibition.

June 11.

Kelway Prize.

Herbaceous Peonies.—Collection of eighteen named varieties, single or double:
1st, A. H. Fewkes, Silver Gilt Medal; 2d, George Hollis, Bronze Medal.

Society's Prizes.

Herbaceous Peonies.—Collection of twelve or more varieties, single:
1st, T. C. Thurlow, $4.
Vase of blooms on long stems, arranged for effect:
1st, Mrs. J. L. Gardner, $10; 2d, E. A. Clark, $6.

Gratuities:—

George Hollis, Display, named varieties of Peonies, $3.
E. J. Shaylor, " " " " " $5.
T. C. Thurlow, " " " " " $3.
W. H. Heustis, Collection of Hardy Shrubs, $4.
Mrs. J. B. Lawrence, Collection of Herbaceous Plants, $1.
Mrs J. L. Gardner, Vase of Peonies, $3.
Mrs. E. M. Gill, Display of Peonies, $5.

Rose and Strawberry Exhibition.

June 21 and 22.

Herbaceous Peonies.—Collection of thirty or more named varieties, double:
1st, T. C. Thurlow, $12; 2d, A. H. Fewkes, $8; 3d, Means Estate, $6; 4th, George Hollis, $4.

Theodore Lyman Fund.

Hardy Roses.—Twenty-four distinct named varieties, three of each:
1st, Miss S. B. Fay, $25; 2d, E. A. Clark, $20; 3d, Miss S. B Fay, $15.

Sarah B. Fay Prizes. Amateur.

Hardy Roses.—For the largest and best collection named, not less than twelve varieties:
1st, Mrs. O. S. Paige, $25; 2d, Mrs. E. Wilkie, $15; 3d, Mrs. Day Chadwick, $10.

Society's Prizes.

HARDY ROSES.—Twelve named varieties, three of each:
1st, Miss S. B. Fay, $12; 2d, Jos. H. White, $8; 3d, A. F. Estabrook, $6.
Six named varieties, three of each:
1st, Miss S. B. Fay, $6; 2d, Jos. H. White, $4.
Twenty-four named varieties, one of each:
1st, Miss S. B. Fay, $12; 2d, E. A. Clark, $8.
Eighteen named varieties, one of each:
1st, Jos. H. White, $8.
Twelve named varieties, one of each:
1st, Jos. H. White, $6.
Six named varieties, one of each:
1st, W. A. L. Bazeley, $4; 2d, A. F. Estabrook, $3.
Twenty-four blooms of Mme. Gabriel Luizet:
1st, Miss S. B. Fay, $6; 2d, Mrs. E. M. Gill, $4; 3d, Jos. H. White, $3.
Six blooms Alfred Colomb:
1st, Miss S. B. Fay, $3.
Six blooms Baroness Rothschild:
1st, Mrs. O. S. Paige, $3.
Six blooms Mrs. John Laing:
1st, Mrs. O. S. Paige, $3.
Six blooms General Jacqueminot:
1st, Miss S. B. Fay, $3; 2d, Mrs. O. S. Paige, $2.
Six blooms Ulrich Brunner:
1st, Miss S. B. Fay, $3.
Six blooms any other variety:
1st, Mrs. O. S. Paige, Baron de Bonstetten, $3; 2d, Wm. Whitman, Victor Verdier, $2; 3d, Mrs. O. S. Paige, Hyppolyte Jamain, $1.
Best three blooms of a variety introduced since 1961:
1st, Miss S. B. Fay, J. S. Fay, $3.
General Display.—One hundred bottles of Hardy Roses:
1st, Miss S. B. Fay, $15; 2d, Mrs. E. M. Gill, $10; 3d, Dr. C. G. Weld, $8; 4th, Peter Cairns, $6; 5th, Walter Hunnewell, $5.
SWEET WILLIAMS.—Display, eighteen vases of three trusses each:
1st, Wm. Whitman, $3; 2d, Wm. Whitman, $2; 3d, A. McLaren, $1.

Gratuities:—

Mrs. J. L. Gardner, Gloxinias and foliage plants, $8.
J. S. Bailey, Group of Palms, $20.
E. A. Clark, Collection of Gloxinias, $8.
E. J. Shaylor, Display of Peonies, $5.
Dr. Charles S. Minot, Display of Peonies, $3.
T. C. Thurlow, " " " $5.
George Hollis, Display of Seedling Peonies, $5.
Mrs. E. M. Gill, Display of Peonies, $3.

Dr. C. G. Weld, Vase of Peony, Baroness Schrœder, $1.
Peter Fisher, Display of Carnations, $3.
Patten & Co., Vase of Carnation, Mrs. M. A Patten, $1.
Mrs. J. B. Lawrence, Display of flowers, $1.
W. H. Heustis, Herbaceous Plants and Shrubs, $2.
Blue Hill Nurseries, Display of Herbaceous Plants, $8.
Harvard Botanic Garden, Display of Herbaceous Plants and Aquatics, $12.
Frederic J. Rea, *Campanula persicifolia grandiflora*, $1.
Miss Sarah B. Fay, Display of Roses, $3.
Mrs. J. L. Gardner, two vases Peonies, $2.

JULY 9.

HARDY ROSES.—Collection, named, not less than twelve varieties, filling fifty vases, one rose in each vase:
2d, Miss S. B. Fay, $8; 3d, Miss S. B. Fay, $4.

IRIS KEMPFERI.—Collection of varieties, filling twenty-five vases:
1st, William Whitman, $8; 2d, Mrs. J. L. Gardner, $5.

CAMPANULA MEDIUM.—Collection, not less than fifteen bottles:
1st, William Whitman, $4.

DELPHINIUMS.— Display, thirty vases of three spikes each:
1st, Mrs Winthrop Chanler, $10; 2d, William Whitman, $6; 3d, Mrs. J. L. Gardner, $4.

HARDY HERBACEOUS FLOWERS AND GRASSES.—Thirty bottles:
1st, Walter Hunnewell, $8; 2d, W. J. Clemson, $6; 3d, Bay State Nurseries, $4.

Gratuities:—

Blue Hill Nurseries, Display of Herbaceous Plants, $10.
Carl Blomberg, " " " " $5.
George Hollis, Display of flowers, $1.
Lyman H. Atkins, Collection of Poppies, $2.
Mrs. E. M. Gill, Display of flowers, $2.
M. H. Walsh, Display of Cut Rambler Roses, $5.
Harvard Botanic Garden, Display of Herbaceous Plants, $12.
Peter Cairns, Roses and Iris, $3.

JULY 16.

SWEET PEAS.—Display of named varieties, filling thirty vases:
1st, W. J. Clemson, $10; 2d, E. A. Clark, $6; 3d, Wm. Whitman, $4.
Display of twelve named varieties, twelve sprays of each:
1st, E. A. Clark, $4; 2d, W. J. Clemson, $3; 3d, Mrs. E. M. Gill, $2.

Gratuities:—

Mrs. E. M. Gill, Display of flowers, $3.
Mrs. J. B. Lawrence, Display of Herbaceous Flowers, $2.
E. A. Clark, Display of Hybrid Pentstemons, $3.
H. H. Rogers, Display of Tuberous Begonias, $2.
Lyman H. Atkins, Display of Shirley Poppies, $2.

JULY 23.

ACHIMENES.—Six, in not over ten-inch pans or pots, of six varieties:
2d, Mrs. J. L. Gardner, $6.

HARDY AQUATIC FLOWERS.—Collection, named:
2d, Mrs. J. L. Gardner, $8.

Gratuities:—

Mrs. E. M. Gill, Collection of flowers, $3.
William Whitman, Display of Herbaceous Phlox, $5.
Harvard Botanic Garden, Display of Aquatic Flowers, $10.
W. A. Manda, Collection of Lælias and Cattleyas, $4.

JULY 30.

HARDY HERBACEOUS FLOWERS AND GRASSES—Thirty bottles:
1st, Carl Blomberg, $8; 2d, Walter Hunnewell, $6; 3d, The Bay State Nurseries, $4.

Gratuities:—

William Whitman, Display of flowers, $5.
Mrs. E. M. Gill, " " " $1.
Mrs. L. Towle, Dahlias and Sweet Peas, $2.
L. H. Atkins, Display of flowers grown in back yard of apartment house, $1.
Harvard Botanic Garden, Herbaceous Flowers and Plants, $8.
Peter Cairns, Hollyhocks, $1.
The Blue Hill Nurseries, Display of Herbaceous Phlox, $5.

AUGUST 6.

PERENNIAL PHLOXES.—Twelve named varieties, one truss of each:
1st, Blue Hill Nurseries, $8; 2d, William Whitman, $6; 3d, T. C. Thurlow, $4; 4th, George Hollis, $2.

Gratuities:—

William Whitman. Display of flowers, $4.
Blue Hill Nurseries, Display of Phlox, $2.
Mrs. J. B. Lawrence, Display of Sweet Peas, $2.
Mrs. E. M. Gill, Display of Phlox, $2.

AUGUST 13.

ANNUALS.—General Display, named, not less than fifty varieties:
1st, Mrs. J. L. Gardner, $10.

Gratuities:—

Mrs. L. Towle, Dahlias and Annuals, $3.
Bay State Nurseries, Display of Hardy Phlox, $3.
Wm. Whitman, General Display and collection of Ferns, $5.
Mrs. E. M. Gill, General Display, $2.
Harvard Botanic Garden, two tables of Annuals, $8.
Mrs. A. W. Blake, Specimen plant of *Eucharis Amazonica*, $3.

AUGUST 20.

PERENNIAL PHLOXES.—General Display in not less than thirty vases:
1st, T. C. Thurlow, $6; 4th, Anthony McLaren, $2.

Gratuities:—

Lager & Hurrell, Display of Orchids, $5.
Mrs. E. M. Gill, Display of Flowers, $2.

AUGUST 27.

Theodore Lyman Fund.

ASTERS.—Of all classes, fifty vases, not less than twelve varieties:
1st, Mrs. J. L. Gardner, $8; 2d, W. J. Clemson, $6.

HARDY HERBACEOUS FLOWERS AND GRASSES.—Thirty bottles:
1st, Carl Blomberg, $8; 2d, Walter Hunnewell, $6.

Gratuities:—

E. L. Wheeler, Seedling Gladioli, $1.
W. G. Winsor, Collection of Dahlias, $4.
Mrs. L. Towle, " " " $3
Mrs. E. M. Gill, Display of flowers, $2.

SEPTEMBER 3.

Gratuity:—

W. G. Winsor, Display of Dahlias, $3.

ANNUAL EXHIBITION.

SEPTEMBER 22, 23, 24, 25.

PALMS.—Pair in pots or tubs:
1st, Mrs. J. L. Gardner, $15; 2d, A. F. Estabrook, $12; 3d, J. S. Bailey, $8.

GREENHOUSE PLANTS.—Best finished group, containing foliage plants of all descriptions, arranged for effect:

1st, Mrs. J. L. Gardner, $50; 2d, J. S. Bailey, $35.

Six Greenhouse and Stove Plants, decorative specimens of different named varieties:

1st, Mrs. J. L. Gardner, $20; 2d, J. S. Bailey, $15.

FLOWERING GREENHOUSE PLANT.—Single specimen, named:

2d, Peter Cairns, $6.

CALADIUMS.—Six named varieties:

2d, A. F. Estabrook, $8.

FERNS.—Five named varieties:

1st, J. S. Bailey, $12; 2d, A. F. Estabrook, $8; 3d, Mrs. J. L. Gardner, $6.

Specimen other than Tree Fern:

1st, J. S. Bailey, $4; 2d, Mrs. J. L. Gardner, $3.

ADIANTUMS.—Five named varieties:

1st, Mrs. J. L. Gardner, $10; 2d, A. F. Estabrook, $6.

DRACÆNAS.—Six named varieties:

1st, Mrs. J. L. Gardner, $8; 2d, J. S. Bailey, $6.

CROTONS.—Twenty-five plants, not less than eighteen named varieties:

1st, J. S. Bailey, $12.

CYCAD.—Single plant, named:

1st, A. F. Estabrook, $8.

BEGONIA REX.—Ten pots of ten varieties:

1st, Mrs. J. L. Gardner, $10.

OUVIRANDRA FENESTRALIS.—

1st, Mrs. J. L. Gardner, $6.

Theodore Lyman Fund.

AQUATICS.—General Display of Nymphæas, Nelumbiums, Sedges, Papyrus, and any other Aquatic Plants:

1st, Bayard Thayer, $18.

GLADIOLI.—Twenty-five named varieties, in spikes:

1st, J. K. Alexander, $5.

Display of named and unnamed varieties, filling one hundred vases, arranged for effect:

1st, W. P. Lothrop, $8.

Society's Prizes.

DAHLIAS.—Show, eighteen blooms, named varieties:

1st, E. W. Ela, $4; 2d, J. K. Alexander, $3; 3d, W. C. Winter, $2.

Fancy, eighteen blooms, named varieties:

1st, E. W. Ela, $4; 2d, Wm. C. Winter, $3; 3d, H. F. Burt, $2.

Cactus, twelve blooms, named varieties:

1st, E. W. Ela, $4; 2d, J. K. Alexander, $3; 3d, H. F. Burt, $2.

Decorative, twelve blooms, named varieties:

1st, Wm. C. Winter, $3; 2d, E. W. Ela, $2; 3d, Geo. D. Cook, $1.

Show, twelve blooms, named varieties:

1st, W. P. Lothrop, $3; 2d, Wm. C. Winter, $2; 3d, E. W. Ela, $1.

Fancy, twelve blooms, named varieties:
1st, E. W. Ela, $3; 2d, H. F. Burt, $2; 3d, Wm. C. Winter, $1.
Best single bloom, of any class, introduction of 1902 or later:
1st, Geo. D. Cook, Mrs. Roosevelt, $2; 2d, H. F. Burt, Mrs. DeLuca, $1.
Pompon, twelve vases of three blooms each, named varieties:
1st, J. K. Alexander, $3; 2d, Wm. C. Winter, $2; 3d, W. P. Lothrop, $1.
Single, twelve vases of three blooms each, named varieties:
1st, E. W. Ela, $3; 2d, W. P. Lothrop, $2; 3d, Wm. C. Winter, $1.
General Display, one hundred or more bottles, in Society's racks:
1st, Wm. C. Winter, $8; 2d, G. H. Walker, $6; 3d, J. K. Alexander, $4.

HARDY HERBACEOUS FLOWERS AND GRASSES.—Thirty bottles:
1st, Carl Blomberg, $8; 2d, Mrs. E. M. Gill, $6.

Gratuities:—

R. & J. Farquhar & Co., Display of Decorative Plants, $30.
Edward J. Mitton, Display of Orchids and Ferns, $5.
A. F. Estabrook, Solanums, $3.
Mrs. J. L. Gardner, Display of plants, $6.
Harvard Botanic Garden, " " " $50.
Julius Roehrs, Display of Orchids, $8.
Lager & Hurrell, " " " $10.
Mrs. M. L. Atwood, Window cultivation of Achimenes, $3.
E. W. Ela, Display of Dahlias, $2.
R. P. Struthers, " " " $2.
J. W. Keefe, " " " $1.
John Mason Little, " " " $1.
H. E. Stone, " " " $4.
Mrs. E. M. Gill, Display of flowers, $2.
Blue Hill Nurseries, Display of Herbaceous Plants, $4.
Waldo L. Wheeler, Display of Gladioli, $2.
J. E. Rothwell, Display of Orchids, $6.

CHRYSANTHEMUM SHOW.

NOVEMBER 3, 4, 5, 6.

PLANTS.

Henry A. Gane Memorial Fund.

CHRYSANTHEMUMS.—For the best specimen plant of Marcia Jones:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $5.

Society's Prizes.

Display of eight named plants, in not over twelve-inch pots:
1st, Herbert Dumaresq, $75; 2d, Mrs. C. C. Converse and Mrs. Lester Leland, $50; 3d, Jason S. Bailey, $40.

Three Japanese, Incurved:
1st, E. W. Converse, $12; 2d, Mrs. C. C. Converse and Mrs. Lester Leland, $8; 3d, J. S. Bailey, $6.

Three Reflexed, distinct named varieties:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $12; 2d, E. W. Converse, $8.

Two Anemone Flowered, distinct named varieties:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $8; 2d, Mrs. C. C. Converse and Mrs. Lester Leland, $6.

Specimen, Japanese Incurved, named variety:
1st, E. W. Converse, $6; 2d, Herbert Dumaresq, $4; 3d, Herbert Dumaresq, $3.

Specimen, Reflexed, named variety:
1st, Herbert Dumaresq, $6; 2d, E. W. Converse, $4; 3d, E. W. Converse, $3.

Specimen, Pompon, named variety:
1st, E. W. Converse, $6; 2d, H. Dumaresq, $4; 3d, Mrs. C. C. Converse and Mrs. Lester Leland, $3.

Specimen plant of any variety not included in above classes:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $6; 2d, J. S. Bailey, $4; 3d, E. W. Converse, $3.

Twelve plants, of twelve different varieties, grown to one stem and bloom, in not over six-inch pots:
1st, James Nicol, $8; 2d, Mrs. C. C. Converse and Mrs. Lester Leland, $6; 3d, Mrs. C. C. Converse and Mrs. Lester Leland, $4.

Group of Chrysanthemum plants, arranged for artistic decorative effects:
1st, Mrs. J. L. Gardner, $50; 2d, Mrs. C. C. Converse and Mrs. Lester Leland, $40; 3d, E. A. Clark, $30.

FLOWERS.

Representative collection of classes labeled in accordance with the classification of the Chrysanthemum Society of America:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $30.

SPECIAL PRIZES FOR CHRYSANTHEMUMS.

Josiah Bradlee Fund.

Twenty-five blooms of twenty-five distinct varieties, named:
1st, E. A. Clark, $18; 2d, P. W. Moen Estate, $12; 3d, Thomas Doliber, $8.

Six vases of six named varieties, ten blooms each:
1st, Thomas Doliber, $30.

Henry A. Gane Memorial Fund.

For the best six specimen blooms of Mrs. Jerome Jones, or any of the sports thereof:
1st, James Nicol, $3; 2d, Arthur F. Whitin, $2.

Society's Prizes.

Twelve blooms, Incurved, named:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $6.
Twelve blooms, Japanese, named:
1st, Peter B. Robb, $8; 2d, P. W. Moen Estate, $6.
Twelve blooms, Japanese, Incurved, named:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $8; 2d, Peter B. Robb, $6; 3d, Morton F. Plant, $4.
Twelve blooms, Reflexed, named:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $8.
Twelve blooms, Anemone, named:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $6.
Twelve sprays, Pompons, distinct:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $5; 2d, Peter B. Robb, $3.
Six best varieties, named, introductions of the current year:
1st, Peter B. Robb, $6.
Vase of ten blooms, on long stems, Pink, named:
1st, Morton F. Plant, Dr. Enguehard, $10; 2d, E. D Jordan, Wm. Duckham, $8; 3d, Thomas Doliber, Viviand-Morel, $6.
Vase of ten blooms, on long stems, Red, named:
1st, Mrs. M. W. Pierce, J. Shrimpton, $10.
Vase of ten blooms, on long stems, White, named:
1st, E. A. Clark, Merza, $10; 2d, G. W. Knowlton, Timothy Eaton, $8; 3d, Thomas Dolliber, Ben Wells, $6.
Vase of ten blooms, on long stems, Yellow, named:
1st, Thomas Doliber, Col. D. Appleton, $10; 2d, G. W. Knowlton, Col. D. Appleton, $8; 3d, A. Herrington, Cheltoni, $6.
Vase of ten blooms, on long stems, any other color, named:
1st, A. F. Whitin, Wm. R. Church, $10; 2d, E. A. Clark, Kate Broomhead, $8; 3d, Herbert Dumaresq, Lady Hanham, $6.

ADDITIONAL SPECIAL PRIZES.

Massachusetts Horticultural Society.

For the best fifty blooms of Chrysanthemums, of one or more varieties, to be shown in the Society's large China vases:
1st, E. A. Clark, $60; 2d, Herbert Dumaresq, $50; 3d, Thomas Doliber, $40; 4th, M. F. Plant, $30; 5th, Eben D. Jordan, $20.

Gardeners' and Florists' Club of Boston.

For twelve blooms of any Chrysanthemum of current season's introduction in America:
1st, A. Herrington, Cheltoni, $25; 2d, E. A. Clark, Cheltoni, $15.

William Nicholson.

For the best vase of one hundred White Carnations:
1st, Peter Fisher, Seedling Number 411, $10.

Patten & Company.

For the best vase of fifty blooms of Carnation, Mrs. Patten:
1st, Wm. Nicholson, $10.

Peter Fisher.

For the best vase of fifty blooms of Carnation, Nelson Fisher:
1st, M A. Patten, $10.

ORCHIDS.—Display of named species and varieties, filling not less than twenty bottles:

1st, F. L. Ames Estate, Appleton Silver Gilt Medal; 2d, Col. Charles Pfaff, Appleton Silver Medal; 3d, Edward MacMulkin, Appleton Bronze Medal.

Gratuities:—

Edward MacMulkin, Display of Orchids, $30.
R. & J. Farquhar & Co., Palms and Begonias, $20.
Lager & Hurrell, Display of Orchids, $15.
F. R. Pierson Co., " " Tarrytown Fern, $8.
A. M. Davenport, " " Ferns and Cyclamen, $8.
Backer & Co., three vases Carnations, $3.
H. A. Stevens Co., five vases Carnations, $5.
J. D. Thompson Co., vase of Carnation, Estelle, $1.
M. A. Patten, vase of Carnation, Mrs. Patten, $2.
Wm. Nicholson, " " " $3.
Waban Rose Conservatories, vase of American Beauty Roses, $5.
Mrs Cornelius Vanderbilt, Display of *Amaryllis belladonna* and Gardenias, $5.
Thomas Doliber, Display of Chrysanthemums, $20.
E. A. Clark, " " " $2.
J. B. Shurtleff, Jr., " " Pansies, $1.
Mrs. E. M. Gill, " " Chrysanthemums, $6.
Carl Jurgens, vase of Rose, Augusta Victoria, $1.

NOVEMBER 19.

Gratuity.

H. H. Rogers, vase of Chrysanthemum, Dr. Enguehard, $2.

Society's Gold Medals.

August 6. R. & J. Farquhar & Co., *Lilium Philippinense.*

Chrysanthemum Show, November 3, 4, 5, 6. W. Wells & Co., Ltd , Collection of undisseminated Chrysanthemums.

Society's Silver Medals.

Rose Show, June 21, 22. Prof. Robt. T. Jackson, Richardson seedling Peony, Samuel Henshaw.

August 13. F. L. Ames Estate, Display of cut Orchids.

Annual Exhibition, September 22, 23, 24, 25. F. R. Pierson Co., *Nephrolepis exaltata Piersoni compacta.*

Annual Exhibition, September 22, 23, 24, 25. Henry A. Dreer, Display of Aquatics.

Chrysanthemum Show, November 3, 4, 5, 6. John Scott, *Nephrolepis Scottii.*

Chrysanthemum Show, November 3, 4, 5, 6. Sander & Son, *Nicotiana Sanderæ.*

Society's Bronze Medals.

Rose Show, June 21, 22. Mrs. Harriett R. Foote, Collection of tea and hybrid tea Roses.

First Class Certificates of Merit.

January 30. W. B. Arnold, Striped sport from Carnation, Mrs. Thomas W. Lawson.

January 30. Robert Cameron, *Acacia Baileyana.*

Spring Exhibition, March 24. M. H. Walsh, Rambler rose, Wedding Bells,

" " " " M. H. Walsh, " " Babette.

" " " " Louis Dupuy, *Hydrangea hortensis rosea.*

" " " " E. O. Orpet, Cattleya × Katherinæ, (*C. Warneri* × *C. Schroderæ alba*).

Spring Exhibition, March 24. F. R. Pierson Co., New Fern, Sport from *Nephrolepis Piersoni* (*N. Piersoni compacta*).

Spring Exhibition, March 24. F. R. Pierson Co., White Lawson Carnation.

Spring Exhibiton, March 24. A. Roper, Seedling Carnation, Chester Roper.

May Exhibition, May 7. J. E. Rothwell, Lælia × Latona, (*L. cinnabarina* × *L. purpurata*).

" " " " L. E. Small, Seedling Carnation, Number 3.

Peony Exhibition, June 11. E. J. Shaylor, Peony, Lady Alexandra Duff.

" " " " Prof. Robt. T. Jackson, Richardson seedling Peony, Ferdinand Stoliczka.

Peony Exhibition, June 11. Prof. Robt. T. Jackson, Richardson seedling Peony, Charles Sedgwick Minot.

Peony Exhibition, June 11. T. D. Hatfield, Seedling Peony, Number 1.
" " " " T. D. Hatfield, " " " 2.
Rose and Strawberry Exhibition, June 21. E. J. Shaylor, new Peony, Mme. Emile Lemoine, (Lemoine).
Rose and Strawberry Exhibition, June 21. E. J Shaylor, new Peony, Marguerite Gerard, (Crousse).
Rose and Strawberry Exhibition, June 21. George Hollis, seedling Peony, Mary Louise Hollis.
Rose and Strawberry Exhibition, June 21. George Hollis, seedling Peony, Sunrise.
Rose and Strawberry Exhibition, June 21. A. H. Fewkes, new Peony, Avalanche, (Crousse).
Rose and Strawberry Exhibition, June 21. Prof. Robt. T. Jackson, Richardson seedling Peony, John Richardson.
Rose and Strawberry Exhibition, June 21. Prof. Robt. T. Jackson, Richardson seedling Peony, Walter Faxon.
Rose and Strawberry Exhibition, June 21. Jackson Dawson, seedling Rose, Minnie Dawson.
July 9. J. E. Rothwell, Cypripedium, Mrs. J. E. Rothwell. (*C. almum* × *C. niveum*).
August 6. F. L. Ames Estate, *Rehmannia angulata*.
" 13. Blue Hill Nurseries, Display of one hundred varieties of herbaceous plants.
" 20. Joseph H. White, new Phlox, Tapis blanc.
Annual Exhibition, September 22-25. Henry A. Dreer, *Nymphæa dentata superba*.
Annual Exhibition, September 22-25. Henry A. Dreer, *Nymphæa Zanzibariensis Pennsylvania*.
Annual Exhibition, September 22-25. Blue Hill Nurseries, *Kniphofia Pfitzerii*.
Chrysanthemum Show, November 3-6. Guttman & Weber, seedling Carnation, Victory.
Chrysanthemum Show, November 3-6. Waban Rose Conservatories, seedling Rose, Wellesley.
Chrysanthemum Show, November 3-6. Cottage Gardens, seedling Carnation, Robert Craig.
Chrysanthemum Show, November 3-6. Chicago Carnation Co., seedling Carnation, Fiancée.
November 19. James Garthley, seedling Pompon Chrysanthemum, Victoria.

HONORABLE MENTION.

Spring Exhibition, March 24-27. Julius Roehrs, *Livistona Woodwardii*.
" " " " L. E. Small, seedling Carnation, Number 3.

Spring Exhibition, March 24-27. S. J. Goddard, seedling Carnation, Helen Goddard.

Spring Exhibition. March 24-27. John N. May, " " The Bride.

Spring Exhibition, March 24-27. John N. May, new Rose, Gen. McArthur.

May Exhibition, May 7. Geo. F. Fabyan, Pelargonium, Miss Henderson.

Rhododendron Exhibition, June 4-5. Horatio C. Meriam, new German Iris, Madonna alba.

Peony Exhibition, June 11. Geo. Hollis, seedling Peony, Number 623.

Rose and Stawberry Exhibition, June 21-22. Geo. Hollis, seedling Peony, Number 986, 1904.

Rose and Strawberry Exhibition, June 21-22. George Hollis, " " Number 181, 1902.

Rose and Strawberry Exhibition, June 21-22. George Hollis, " " Number 279, 1902.

Rose and Strawberry Exhibition, June 21-22. George Hollis, " " Number 732, 1904.

Rose and Strawberry Exhibition, June 21-22. George Hollis, " " Number 491, 1903.

Rose and Strawberry Exhibition, June 21-22. George Hollis, " " Beauty's Mask.

Rose and Strawberry Exhibition, June 21-22. Walter Hunnewell, Campanula from Siberia.

Rose and Strawberry Exhibition, June 21-22. Jackson Dawson, seedling Rose, *Rosa Wichuraiana* × *Triomphe de Luxembourg*.

July 9. J. E. Rothwell, Cypripedium × Burbidgeanum. (*C. Dayanum* × *C. concolor*).

" 9. F. L. Ames Estate, Sweet Pea, Scarlet Gem.

" 16. H. H. Rogers, double tuberous Begonia, Gold of Ophir.

" 16. H. H. Rogers, tuberous Begonia, *Grandiflora erecta cristata*.

" 16. F. L. Ames Estate, Sweet Pea, White Wonder.

" 16. F. L. Ames Estate, " " King Edward VII.

" 16. F. L. Ames Estate, " " Dorothy Eckford.

" 23. Edward Kirk, seedling hardy Carnation, bright scarlet.

" 23 W. A. Manda, *Lælia elegans*, Mrs. Geo. Schlegel.

" 23. W. A. Manda, " " Number 200.

August 6. Blue Hill Nurseries, seedling Phlox, red, Number 17.

" 6. Blue Hill Nurseries, " " pink, Daybreak.

" 6. W. N. Craig, seedling Phlox, Number 3.

" 6. F. S. Davis, white bush Dolichos.

" 13. Wm. Whitman, new Delphiniums.

" 20. R. & J. Farquhar & Co., Display of Lilium auratum.

" 20. Lager & Hurrell, Display of *Lælia elegans*.

" 27. Lyman H. Atkins, Display of flowers grown in apartment-house yard.

Chrysanthemum Show, November 3-6. A. M. Davenport, sport from *Nephrolepis Piersoni*.

Chrysanthemum Show, November 3-6. S. J. Goddard, seedling Carnation, Number 9.

Chrysanthemum Show, " " Peter Fisher, " " Number 113.

Chrysanthemum Show, " " J. D. Thompson Carnation Co., seedling Carnation, Gibson Beauty.

Chrysanthemum Show, November 3-6. M. A. Patten, pink sport from Carnation, Mrs. M. A. Patten.

Chrysanthemum Show, November 3-6. H. A. Jahn, seedling Carnation, Wild Rose.

Chrysanthemum Show, November 3-6. H. A. Jahn, seedling white Carnation, Number 9.

Chrysanthemum Show, " " George B. Anderson, seedling Carnation, Number 10.

Chrysanthemum Show, " " R. & J. Farquhar & Co., collection of Chrysanthemums from Japan.

Chrysanthemum Show, November 3-6. T. Devoy & Son, new Geranium, Telegraph.

Chrysanthemum Show, " " John Cook, unnamed seedling white Rose.

Chrysanthemum Show, " " Mrs. Philip Dexter, seedling white Chrysanthemum.

Votes of Thanks

January 30. R. & J. Farquhar & Co., Display of Palms, Begonias, and Primulas.

January 30. J. Montgomery Sears, Display of Begonia Gloire de Lorraine.

" " Lager & Hurrell, Display of Orchids.

" " F. L. Ames Estate, *Coelogyne cristata*, Chatsworth var.

February 13. Walter Hunnewell, *Odontoglossum Midgleyanum*.

Spring Exhibition, March 24-27. Louis Dupuy, Display of Plants.

" " " " Julius Roehrs, Display of Plants.

" " " " R. & J. Farquhar & Co., Display of Plants.

" " " " Walter Hunnewell, Display of Amaryllis.

" " " " Edmund W. Converse, Display of Palms, Cyclamens, and Primulas.

Spring Exhibition, March 24-27. Lager & Hurrell, Dispay of Orchids.

" " " " Arthur Clark, forced native Orchids and Violets.

Spring Exhibition, March 24-27. Walter Hunnewell, *Amorphophallus Rivieri*.

Spring Exhibition, March 24-27. Bussey Institution, Display of Plants.
" " " " Eugene V. R. Thayer, seedling Orchids.
" " " " J. E. Rothwell, Display of Orchids.
" " " " Harvard Botanic Garden, *Echinocactus Visnaga*.
Spring Exhibition, March 24-27. M. A. Patten, vase of zonale Pelargoniums.
Spring Exhibition, March 24-27. E A. & W. K. Wood, vase of Mignonette.
" " " " Mrs. J. M. Sears, Gardenia flowers.
" " " " Miss E. Jackson Clark, vase of seedling Carnations.
Spring Exhibition, March 24-27. W. P. Winsor, *Dendrobium atroviolaceum*.
May Exhibition, May 7, Walter Hunnewell, *Acuba Japonica fœmina*.
May 28, James L. Little, four varieties of English Carnations.
Rhododendron Exhibition, June 4-5. Walter Hunnewell, display of *Richardia Elliottiana* and Rhododendrons.
Rhododendron Exhibition, June 4-5. Eugene V. R. Thayer, cut sprays of *Odontoglossum crispum*.
Rhododendron Exhibition, June 4-5. C. W. Parker, *Iris pallida Dalmatica*.
Peony Exhibition, June 11. O. B. Hadwen, Collection of Peonies.
" " " " Walter Hunnewell " " "
" " " " Mrs. J. L. Gardner, vase of Peonies.
" " " " Walter Hunnewell, Display of Rhododendrons.
Rose and Strawberry Exhibition, June 21-22. Mrs. J. L. Gardner, Gloxinias and foliage plants.
Rose and Strawberry Exhibition, June 21-22. J. L. Bailey, Group of Palms.
" " " " " " E. A. Clark, Collection of Gloxinias.
Rose and Strawberry Exhibition, June 21-22. R. & J. Farquhar & Co., Palms and Peonies.
Rose and Strawberry Exhibition, June 21-22. Prof. R. T. Jackson, Display of Richardson seedling Peonies.
Rose and Strawberry Exhibition, June 21-22. Benj. P. Ware, Rhododendrons.
Rose and Strawberry Exhibition, June 21-22. A. F. Estabrook, vase of Peonies.
Rose and Strawberry Exhibition, June 21-22. Harvard Botanic Garden, Display of herbaceous flowers and aquatics.
Rose and Strawberry Exhibition, June 21-22. Mrs. E. A. Wilkie, Nymphæas.
Rose and Strawberry Exhibition, June 21-22. C. W. Parker, Iris and Digitalis.
Rose and Strawberry Exhibition, June 21-22. Arnold Arboretum, Display of species and varieties of Roses.
Rose and Strawberry Exhibition, June 21-22. Walter Hunnewell, Rhododendrons and Kalmias.

Rose and Strawbery Exhibition, June 21-22. Mrs. George H. Worthley. hybrid Roses.

Rose and Strawberry Exhibition, June 21-22. Dr. C. S. Minot, vase of Peony, Jules Elie.

July 2. Walter Hunnewell, Display of *Iris Kæmpferi*.
" 9. F. L. Ames Estate, Collection of Sweet Peas.
" 9. R. & J. Farquhar & Co., Farquhar Rose and Iris.
" 9. Lyman H. Atkins, Shirley Poppies.
" 9. J. B. Shurtleff, Jr., *Gaillardia grandiflora*.
" 16. E. P. Shaw, Jr., vase of *Lysimachia clethroides*.
" 23 J. W. Manning, *Rhus typhina laciniata*.
" 30. Lyman H. Atkins, Display of flowers grown in back yard of apartment house.
" 30. Blue Hill Nurseries, vase of *Lilium Batemanniæ*.

August 6. T. C. Thurlow, Display of Phlox.
" 6. F. L Ames Estate, Display of Phlox and Montbretias.
" 6. C. W. Parker, Display of flowers.
" 6. Peter Cairns, *Monstera deliciosa* and *Strelitzia regina*.
" 20. R. & J. Farquhar & Co., Display of Asters.
" 20. F. L. Ames Estate, Display of Gloxinias.
" 20. Lager & Hurrell, Display of Orchids.

September 8. C. W. Parker, Display of Roses.

Annual Exhibition, September 22-25. J. E. Rothwell, Display of Orchids.
" " " " Henry Wood, Violets.
" " " " A. F. Estabrook, vase of *Helenium autumnale*.

Annual Exhibition, September 22-25. C. W. Parker, Display of Roses.

Chrysanthemum Show, November 3-6. Mrs. J. L. Gardner, *Solandra lævis*.,

Cultural Awards.

Society's Silver Medals.

August 6. Robert Cameron, superior cultivation of *Pancratium ovatum*.
" 13. Henry Wild, superior cultivation of *Eucharis Amazonica*.

Annual Exhibition, September 22-25. Robert Cameron, superior cultivation of *Phyllotænium Lindeni*.

December 13. Alexander Ogg, superior cultivation of Begonia Gloire de Lorraine.

First Class Certificates of Merit.

January 30. Alexander Ogg, superior cultivation of Begonia Gloire de Lorraine.

January 30. Robert Cameron, superior cultivation of *Chorizema ilicifolium*.

January 30. George Melvin, superior cultivation of *Cœlogyne cristata*, Chatsworth var.

February 13. T. D. Hatfield, superior cultivation of *Odontoglossum Midgleyanum*.

Spring Exhibition, March 24-27. Wm. Sim, superior cultivation of Sweet Peas, Mont Blanc and Blanche Ferry.

June 4-5. Edward J. Mitton, superior cultivation of *Lælia majalis*.

" " E. O. Orpet, superior cultivation of *Odontoglossum crispum*.

August 6. W. N. Craig, " " " herbaceous Phlox

Annual Exhibition, September 22-25. Robert Cameron, superior cultivation of *Calathea Makoyana*.

Annual Exhibition, September 22-25. Robert Cameron, superior cultivation of *Calathea Lindeniana*.

Chrysanthemum Show, November 3-6. D. F. Roy, superior cultivation of Chrysanthemum plants.

Chrysanthemum Show, November 3-6. Wm Anderson, superior cultivation of Chrysanthemum plants.

December 13. W. B. Arnold, superior cultivation of Carnation, Variegated Lawson.

ARTHUR H. FEWKES,
WILLIAM N. CRAIG,
JAMES WHEELER,
T. D. HATFIELD,
WILLIAM NICHOLSON,
ROBERT CAMERON,
JOHN A. PETTIGREW.

Committee on Plants and Flowers.

REPORT OF THE COMMITTEE ON FRUITS FOR THE YEAR 1904.

BY E. W. WOOD, CHAIRMAN.

The past season has hardly been an average one for the fruit growers of Massachusetts. The apple crop has within the past few years become more nearly an annual crop than formerly when we had an abundant crop on the even calendar year but were dependent largely upon growers outside the State for our supply for home consumption on the odd year.

The crop the past season was unevenly distributed over the State, some localities reporting a full crop, but the amount exported from Boston, though something over four hundred thousand barrels, was not quite equal to that of 1903.

The exhibition of apples has not been as large as the average of previous years though the competition on some of the leading varieties was full and close and some fine specimens were shown.

While the Baldwin must be considered the leading market variety for New England, yet in covering the season the Astrachan, Williams, Gravenstein, Hubbardston, Rhode Island Greening, and Roxbury Russet are all desirable and should be found in every orchard. Another variety of more recent introduction in this vicinity, the McIntosh, deserves special mention; it is of medium size, dark red, white flesh of the Fameuse type, a superior table apple, and brings the highest price in the market.

There was a full bloom on the pear trees the past season but an imperfect set of fruit, and the crop was not an average one in quantity. Among growers for market the number of varieties has been somewhat reduced within the past few years. The Bartlett, Bosc, Sheldon, Seckel, Dana's Hovey, Clairgeau, and Anjou, are the most profitable market varieties; but among amateurs who grow for family use many of the old varieties are still retained and it has seemed desirable to continue them in the schedule.

Peaches unless in exceptionally favorable locations have proved a failure the past season; not only were the fruit buds killed but in many places the trees were severely injured and some were killed to the ground during the winter, and the exhibits of this fruit have been small through the season.

The weekly exhibitions through the summer have been well filled considering the unfavorable fruit conditions.

It is more difficult to arrange the schedule of prizes for fruit than for flowers or vegetables, as the latter are grown almost entirely on annual plants or in greenhouses and can be relied on to make their appearance on the tables in due season, while the various fruits are grown on trees or plants exposed to the trying ordeal of our New England winters, and in every year some varieties through partial or entire failure will not compete for the prizes offered.

At the Annnal Exhibition in September fifty-four prizes were offered for apples and forty-two were awarded; for pears, seventy-five prizes and sixty-eight awarded; for peaches, twenty-four prizes and thirteen awarded, six of these to one grower. At the Strawberry Exhibition in June there were sixty prizes offered and thirty-seven awarded; and at the exhibition of cherries, June 9, out of fifteen prizes offered eight were awarded.

There has been awarded during the year for prizes and gratuities $973.00, leaving an unexpended balance of our appropriation of $303.00.

PRIZES AND GRATUITIES AWARDED FOR FRUITS.

1904.

Spring Exhibition.

March 24, 25, 26, 27.

Gratuity:—

A. K. Gould, Diel Pears, $1.

Rose and Strawberry Exhibition.

June 21 and 22.

Theodore Lyman Fund.

Strawberries.—Four quarts of any variety:
1st, J. Ward, $15; 2d, G. V. Fletcher, $12; 3d, V. Frost, $10; 4th, G. F. Wheeler, $8.

Regular Prizes.

For the largest and best collection, not less than fifteen baskets of two quarts each, and not less than five varieties:
1st, I. E. Coburn, $15; 2d, G. F. Wheeler, $10.

Ten baskets, not less than three varieties, two quarts each:
1st, G. V. Fletcher, $10; 2d, G F. Wheeler, $8.

Five baskets of one variety, two quarts each:
1st, G. V. Fletcher, $6; 2d, G. F. Wheeler, $5; 3d, W. Wheeler, $4.

Two quarts of Belmont:
1st, I. E. Coburn, $3; 2d, G. V. Fletcher, $2.

Brandywine:
1st, M. Sullivan, $3; 2d, G. F. Wheeler, $2

Bubach:
1st, I. E. Coburn, $3; 2d, W. Wheeler, $2; 3d, S. H. Warren, $1.

Clyde:
1st, J. Ward, $3; 2d, I. E. Coburn, $2; 3d, W. E. Coburn, $1.

Haverland:
1st, I. E. Coburn, $3; 2d, W. Wheeler, $2.

Marshall:
1st, J. Ward, $3; 2d, G. V. Fletcher, $2; 3d, V. Frost, $1.

Nick Ohmer:
1st, I. E. Coburn, $3; 2d, W. Wheeler, $2; 3d, W. E. Coburn, $1.

Sample:
1st, J. Ward, $3; 2d, S. H. Warren, $2; 3d, W. E. Coburn, $1.

Any other variety:
1st, G. F. Wheeler, Minute Man, $3; 2d, I. E. Coburn, Glen Mary, $2; 3d, B. G. Smith, Salem, $1.

One quart of any new variety:
1st, S. H. Warren, Seedling, $3; 2d, L. Blanchard, $2.

Cherries.—Two quarts of any variety:
1st, G. V. Fletcher, $3; 2d, J. H. Fletcher, $2.

Foreign Grapes.—Two bunches of any variety:
1st, Miss E. J. Clark, Black Hamburg, $5; 2d, W. C. Winter, Black Hamburg, $3.

Forced Peaches.—Six specimens of any variety:
1st, Miss E. J. Clark, Hale's Early, $3.

Gratuities:—

Miss E. J. Clark, for Trees in fruit, a Silver Gilt Medal; Miss E. J. Clark for Grape, Diamond Jubilee, a First Class Certificate of Merit.

JULY 9.

STRAWBERRIES.—Two quarts of any variety:

1st, B. M. Smith, Commonwealth, $3; 2d, B. M. Smith, North Shore, $2.

CHERRIES.—Two quarts of Black Tartarian:

1st, G. V. Fletcher, $3;

Downer:

1st, C. S. Smith, $3; 2d, C. F. Curtis, $2; 3d, M. W. Chadbourne, $1.

Any other variety:

1st, C. S. Smith, Hyde, $3; 2d, Miss V. Chapell, Napoleon, $2; 3d, Miss V. Chapell, Hovey, $1.

Gratuity:—

Mrs. J. M. Sears for superior cultivation of Nectarines, a First Class Certificate of Merit.

JULY 16.

CURRANTS.—Two quarts of any Red variety:

1st, W. J. Clemson, Cherry, $3; 2d, G. V. Fletcher, Versaillaise, $2; 3d, E. L. Lewis, Versaillaise, $1.

Two quarts of any White variety:

1st, H. R. Kinney, Grape, $2; 2d, E. L. Lewis, Grape, $1.

GOOSEBERRIES.—Two quarts of any variety of American origin:

1st, W. G. Kendall, Chautauqua, $3; 2d, J. S. Chase, Triumph, $2; 3d, G. L. Brown, $1.

JULY 23.

RASPBERRIES.—Two quarts of any variety:

1st, W. J. Clemson, $3.

CURRANTS.—Two quarts of any Red variety:

1st, W. J. Clemson, $3; 2d, G. V. Fletcher, $2; 3d, E. L. Lewis, $1.

Two quarts of any white variety:

1st, E. L. Lewis, $2; 2d, H. R. Kinney, $1.

GOOSEBERRIES.—Two quarts of any variety:

1st, J. S. Chase, Hero of the Nile, $3; 2d, W. J. Clemson, Triumph, $2; 3d, W. J. Clemson, Columbus, $1.

JULY 30.

APPLES.—Yellow Transparent:

1st, G. L. Brown, $3; 2d, M. Sullivan, $2; 3d, D. L. Fiske, $1.

PEARS.—Summer Doyenne:

1st, W. Fenno, $3; 2d, M. Sullivan, $2; 3d, G. Hollis, $1.

Gratuity:—

R. T. Tobey, Apricots, $1.

AUGUST 6.

APPLES.—Red Astrachan:

1st, E. L. Wheeler, $3; 2d, W. Fenno, $2; 3d, W. Heustis & Son, $1.

Sweet Bough:

1st, G. V. Fletcher, $3; 2d, C. B. Travis, $2; 3d, W. Heustis & Son, $1.

Any other variety:

1st, G. L. Brown, Yellow Transparent, $3; 2d, J. C. Stone, Williams, $2; 3d, W. Warburton, Porter, $1.

PEARS.—Giffard:

1st, A. T. Brown, $3; 2d, M. Sullivan, $2; 3d, C. Scully, $1.

Any other variety:

1st, W. Heustis & Son, Clapp's Favorite, $3; 2d, G. V. Fletcher, Clapp's Favorite, $2; 3d, W. Fenno, Manning's Elizabeth, $1.

BLACKBERRIES.—Two quarts of any variety:

1st, W. J. Clemson, $3; 2d, A. Low, $2.

PEACHES.—Open culture, any variety:

1st, G. V. Fletcher, $3; 3d, C. Scully, $1.

AUGUST 13.

APPLES.—Oldenburg:

1st, H. A. Clark, $3; 2d, J. L. Bird, $2; 3d, D. L. Fiske, $1.

Any other variety:

1st, E. L. Wheeler, Astrachan, $3; 2d, M. Sullivan, Yellow Transparent, $2; 3d, E. L. Wheeler, Williams, $1.

PEARS.—Clapp's Favorite:

1st, H. A. Clark, $3; 2d, A. T. Brown, $2; 3d, W. Heustis & Son, $1.

Any other variety:

1st, M. Sullivan, Giffard, $2; 2d, W. Fenno, Giffard, $1.

PEACHES.—Twelve specimens, of outdoor culture:

1st, G. V. Fletcher, Carman, $3; 2d, F. J. Kinney, Carman, $2; 3d, D. L. Fiske, Greensboro, $1.

Six specimens, of cold house or pot culture, of any variety:

1st, Mrs. J. C. Whitin, $4; 2d, Mrs. J. C. Whitin, $3.

BLACKBERRIES.—Two quarts of any variety:

3d, A. Low, $1.

PLUMS.—Japanese, any variety:

1st, E. L. Lewis, Chabot, $3; 2d, E. L. Lewis, Abundance, $2; 3d, E. L. Wheeler, Red June, $1.

NECTARINES.—Orchard house culture, twelve specimens:

1st, Peter Cairns, Elruge, $4.

FOREIGN GRAPES.—Two bunches of any variety:

1st, W. C. Winter, Black Hamburg, $4; 2d, Mrs. J. C. Whitin, Muscat of Alexandria, $3.

AUGUST 20.

APPLES.—Chenango:
1st, C F. Curtis, $3; 2d, É. E. Cole, $2; 3d, G. L. Brown, $1.
Summer Pippin:
1st, W. Fenno, $3.
Williams:
1st, V. Frost, $3; 2d, E. L. Wheeler, $2; 3d, J. C. Stone, $1.
Any other variety:
1st, H. A. Clark, Oldenburg, $3; 2d, E. L. Wheeler, Astrachan, $2; 3d, G. V. Fletcher, Gravenstein, $1.
PEARS.—Rostiezer:
1st, M. Sullivan, $3; 2d, C. F. Curtis, $2.
Tyson:
1st, J. L. Bird, $3.
Any other variety:
1st, F. W. Damon, Clapp's Favorite, $3; 2d, H. A. Clark, Clapp's Favorite, $2; 3d, W. Heustis & Son, Clapp's Favorite, $1.
PEACHES.—Any variety:
1st, G. V. Fletcher, Carman, $3; 2d, H. A. Clark, Hale's Early, $2; 3d, F. H. Evans, Carman, $1.
PLUMS, JAPANESE.—Abundance:
1st, E. L. Lewis, $3; 2d, A. Low, $2; 3d, W. Heustis & Son, $1.
Burbank:
1st, E. L. Lewis, $3; 2d, E. L. Wheeler, $2; 3d, A. Low, $1.
Any other variety:
1st, W. F. Hutchinson, Lincoln, $3; 2d, E. L. Lewis, Bradshaw, $2; 3d, G. V. Fletcher, Bradshaw, $1.
Gratuity:—
Mrs. A. E. Monblo, "India" Raspberry, $1.

AUGUST 27.

APPLES.—Gravenstein:
1st, G. V. Fletcher, $3; 2d, H. A. Clark, $2; 3d, E. L. Wheeler, $1.
Porter:
1st, G. V. Fletcher, $3; 2d, W. Heustis & Son, $2; 3d, J. C. Stone, $1.
Any other variety:
1st, E. E. Cole, Alexander, $3; 2d, E. E. Cole, Chenango, $2; 3d, V. Frost, Williams, $1.
PEARS.—Bartlett:
1st, W. Milman, $3; 2d, W. Fenno, $2; 3d, A. T. Brown, $1.
Any other variety:
1st, S. S. Symmes, Clapp's Favorite, $3; 2d, F. E. Coolidge, Clapp's Favorite, $2; 3d, G. V. Fletcher, Clapp's Favorite, $1.
PEACHES.—Collection:
1st, D. L. Fiske, $4.

Single dish:

1st, F. J. Kinney, Carman, $3; 2d, F. H. Evans, Carman, $2; 3d, G. V. Fletcher, $1.

PLUMS.—Any variety:

1st, E. L. Lewis, Bradshaw, $3; 2d, S. S. Symmes, Bradshaw, $2; 3d, A. Low, Burbank, $1.

NATIVE GRAPES.—Any variety, six bunches:

1st, W. G. Kendall, Green Mountain, $3; 2d, J. S. Chase, Green Mountain, $2; 3d, G. V. Fletcher, Moore's Early, $1.

Gratuity:—

Peter Cairns, Figs, $1.

ANNUAL EXHIBITION.

SEPTEMBER 22, 23, 24, 25.

Theodore Lyman Fund.

APPLES.—Dutch Codlin:

1st, W. Fenno, $3.

Fletcher Russet:

1st, G. V. Fletcher, $3; 2d, C. M. Handley, $2.

Pound Sweet:

1st, G. V. Fletcher, $3.

Washington Royal or Palmer:

1st, A. E. Hartshorn, $3; 2d, H. R. Kinney, $2; 3d, H. J. Sawyer, $1.

Any other variety:

1st, L. F. Priest, Rolfe, $3; 2d, W. G. Kendall, Maiden Blush, $2; 3d, E. E. Cole, Alexander, $1.

Samuel Appleton Fund.

APPLES.—Baldwin:

1st, E. E. Cole, $3; 2d, J. C. Stone, $2; 3d, G. V. Fletcher, $1.

Hubbardston:

1st, C. M. Handley, $3; 2d, E. R. Teele, $2; 3d, H. J. Sawyer, $1.

PEARS.—Bosc:

1st, A. T. Brown, $3; 2d, G. V. Fletcher, $2; 3d, W. G. Kendall, $1.

Sheldon:

1st, G. E. Freeman, $3; 2d, E. Torrey, $2; 3d, J. L. Bird, $1.

Benjamin V. French Fund.

APPLES.—Gravenstein:

1st, L. F. Priest, $3; 2d, E. M. Bruce, $2; 3d, A. E. Hartshorn, $1.

Rhode Island Greening:

1st, E. E. Cole, $3; 2d, G. V. Fletcher, $2; 3d, J. C. Stone, $1.

Marshall P. Wilder Fund.

PEARS.—Anjou:
1st, A. T. Brown, $3; 2d, G. V. Fletcher, $2; 3d, W. Milman, $1.
Bartlett:
1st, G. V. Fletcher, $3; 2d, W. J. Wheeler, $2; 3d, W. H. Derby, $1.
GRAPES.—Concord, twelve bunches:
1st, J. S. Chase, $3; 2d, W. J. Clemson, $2; 3d, G. V. Fletcher, $1.
Worden:
1st, J. S. Chase, $3.

Society's Prizes.

APPLES.—Fall Orange or Holden:
1st, C. M. Handley, $3; 2d, H. R. Kinney, $2; 3d, E. Moore, $1.
Foundling:
1st, E. M. Bruce, $3; 2d, O. B. Hadwen, $2; 3d, C. M. Handley, $1.
McIntosh:
1st, F. J. Kinney, $3; 2d, H. K. W. Hall, $2; 3d, C. C. Shaw, $1.
Mother:
1st, H. R. Kinney, $3; 2d, G. L. Brown, $2; 3d, F. J Stone, $1.
Porter:
1st, C. M. Handley, $3; 2d, G. F. Wheeler, $2; 3d, W. J. Wheeler, $1.
Washington Strawberry:
1st, E. Moore, $3; 2d, A. E. Hartshorn, $2.
Wealthy:
1st, L. F. Priest, $3; 2d, M. Sullivan, $2; 3d, C. M. Handley, $1.
CRAB APPLES.—Transcendent, twenty-four specimens:
1st, Miss L. F. Wiggin, $2.
Any other variety:
1st, L. F. Priest, Hyslop, $2; 2d, Mrs. J. E. Richardson, $1.
PEARS.—Angouleme:
1st, E. Torrey, $3; 2d, A. T. Brown, $2; 3d, J. L. Bird, $1.
Clairgeau:
1st, W. J. Wheeler, $3; 2d, C. F. Curtis, $2; 3d, F. W. Damon, $1.
Comice:
1st, A. T. Brown, $3; 2d, J. L. Bird, $2; 3d, W. Fenno, $1.
Dana's Hovey:
1st, F. W. Damon, $3; 2d, W. G. Kendall, $2; 3d, G. V. Fletcher, $1.
Diel:
1st, F. W. Damon, $3; 2d, A. T. Brown, $2; 3d, J. L. Bird, $1.
Fulton:
1st, C. F. Curtis, $3; 2d, J. L. Bird, $2; 3d, W. Fenno, $1.
Hardy:
1st, W. Milman, $3; 2d, E. B. Wilder, $2; 3d, S. S. Symmes, $1.
Howell:
1st, W. A. Green, $3; 2d, W. Fenno, $2.

Josephine of Malines:
1st, J. L. Bird, $3; 2d, W. Fenno, $2; 3d, J. B. Shurtleff, Jr., $1.
Lawrence:
1st, M. Sullivan, $3; 2d, A. T. Brown, $2; 3d, S. S. Symmes, $1.
Louise Bonne of Jersey:
1st, A. T. Brown, $3; 2d, C. F. Curtis, $2; 3d, Mrs. C. Whittier, $1.
Marie Louise:
1st, E. Torrey, $3; 2d, A. T. Brown, $2; 3d, W. Fenno, $1.
Merriam:
1st, C. F. Curtis, $3; 2d, F. W. Damon, $2; 3d, J. C. Stone, $1.
Onondaga:
1st, C. B. Travis, $3; 2d, J. L. Bird, $2; 3d, W. Fenno, $1.
Paradise of Autumn:
1st, W. Milman, $3.
Seckel:
1st, W. G. Kendall, $3; 2d, G. V. Fletcher, $2; 3d, F W. Damon, $1.
Souvenir du Congres:
1st, A. T. Brown, $3; 2d, W. Fenno, $2; 3d, J. M. Little, $1.
Superfin:
1st, F. W. Damon, $3; 2d, W. Fenno, $2.
Urbaniste:
1st, J. L. Bird, $3; 2d, W. A. Green, $2; 3d, E. B. Wilder, $1.
Any other variety:
1st, C. F. Curtis, Boussock, $3; 2d, E. B. Wilder, Harris, $2; 3d, W. Heustis & Son, Bonne d'Ezee, $1.

QUINCES.—Any variety:
1st, G. V. Fletcher, Orange, $3.

PEACHES.—Coolidge's Favorite:
1st, G. V. Fletcher, $3; 2d, D. L. Fiske, $2.
Crawford's Late:
1st, D. L. Fiske, $3; 2d, F. J. Stone, $2; 3d, G. V. Fletcher, $1.
Crosby:
1st, D. L. Fiske, $3.
Foster:
1st, S. Robinson, $3.
Oldmixon Freestone:
1st, D. L. Fiske, $3; 2d, G. V. Fletcher, $2.
Stump the World:
1st, D. L. Fiske, $3.
Any other variety:
1st, D. L. Fiske, Elberta, $3; 2d, F. H. Evans, Elberta, $2; 3d, S. S. Symmes, Elberta, $1.

PLUMS.—Coe's Golden Drop:
1st, E. Moore, $2.

Imperial Gage:
1st, G. V. Fletcher, $2.
Lombard:
1st, W. F. Hutchinson, $3; 2d, H. R. Kinney, $2; 3d, A. Low, $1.
Pond's Seedling:
1st, D. McIntire, $2; 2d, E. Moore, $1.
Reine Claude de Bavay:
1st, E. Moore, $2.
Yellow Egg:
1st, G. V. Fletcher, $2.
Any other variety:
1st, G. V. Fletcher, $2; 2d, W. F. Hutchinson, $1.

JAPANESE PLUMS.—Any variety:
1st, W. F. Hutchinson, Chabot, $3; 2d, H. R. Kinney, Burbank, $2; 3d, D. L. Fiske, October Purple, $1

FOREIGN GRAPES.—Two bunches of Black Alicante:
1st, Mrs. R. M. Clark, $5.
Two bunches of Lady Downes:
1st, Mrs. R. M. Clark, $5.

NATIVE GRAPES.—Six bunches of Brighton:
1st, C. W. Libby, $3; 2d, G. V. Fletcher, $2; 3d, J. S. Chase, $1.
Campbell's Early:
1st, L. Darling, $3.
Delaware:
1st, W. J. Clemson, $3; 2d, W. G. Kendall, $2; 3d, J. S. Chase, $1.
Eumelan:
1st, J. S. Chase, $3.
Herbert:
1st, G. W. Jameson, $3; 2d, C. W. Libby, $2.
Lindley:
1st, C. W. Libby, $3.
Massasoit:
1st, J. S. Chase, $3.
Moore's Early:
1st, F. W. Damon, $3; 2d, G. V. Fletcher, $2.
Niagara:
1st, G. W. Jameson, $3; 2d, J. S. Chase, $2; 3d, F. Y. Wellington, $1.
Pocklington:
1st, S. H. Warren, $3; 2d, C. W. Libby, $2; 3d, F. W. Damon, $1.
Prentiss:
1st, J. S. Chase, $3.
Any other variety:
1st, C. W. Libby, Moore's Diamond, $3; 2d, J. S. Chase, Vergennes, $2; 3d, G. W. Jameson, $1.

CHRYSANTHEMUM SHOW.

NOVEMBER 3, 4, 5, 6.

Benjamin V. French Fund.

APPLES.—Baldwin:
1st, C. F. Boyden, $3; 2d, H. A. Clark, $2; 3d, E. E. Cole, $1.
Rhode Island Greening:
1st, G. V. Fletcher, $3; 2d, E. M. Bruce, $2; 3d, E. E. Cole, $1.

Society's Prizes.

APPLES.—Danvers' Sweet:
1st, B P. Ware, $3; 2d, C. M Handley, $2; 3d, C. C. Shaw, $1
Fameuse:
1st, E. E. Cole, $3; 2d, G. V. Fletcher, $2.
Hunt Russet:
1st, C. F. Boyden, $3; 2d, G. F. Wheeler, $2.
Jacobs Sweet:
1st, C. F. Curtis, $3.
McIntosh:
1st, E. M. Bruce, $3; 2d, H. W. K. Hall, $2; 3d, L. J. Kendall, $1.
Northern Spy:
1st, I. H. Locke, $3; 2d, E. E. Cole, $2; 3d, G. V. Fletcher, $1.
Roxbury Russet:
1st, J. C. Stone, $3; 2d, C. F. Boyden, $2; 3d, E. E. Cole, $1.
Tolman Sweet:
1st, E. E. Cole, $3; 2nd, G. V. Fletcher, $2; 3d, E M. Bruce, $1.
Tompkins King;
1st, D. E. Wheeler, $3; 2d, C. F. Boyden, $2; 3d, E. E. Cole, $1.
Wagener:
1st, W. H. Spooner, $3.
Any other variety:
1st, Miss A. Chapman, New York Pippin, $3; 2d, A E. Hartshorn, Gravenstein, $2; 3d, L. J. Kendall, $1.

PEARS.—Angouleme:
1st, F. W. Damon, $3; 2d, A. T. Brown, $2; 3d, E. Torrey, $1.
Anjou:
1st, H. A. Clark, $3; 2d, A. T. Brown, $2; 3d, W Milman, $1.
Bosc:
1st, J. B. Shurtleff, Jr., $3; 2d, A. T. Brown, $2; 3d, G. V. Fletcher, $1.
Clairgeau:
1st, C. F. Curtis, $3; 2d, F. W. Damon, $2; 3d, A. K. Gould, $1.
Comice:
1st, F. W. Damon, $3; 2d, A. T. Brown, $2; 3d, J. L. Bird, $1.

Dana's Hovey:
1st, G. V. Fletcher, $3; 2d, E. W. Wood, $2; 3d, A. T. Brown, $1.
Diel:
1st, A. K. Gould, $3; 2d, F. W. Damon, $2; 3d, A. T. Brown, $1.
Josephine of Malines:
1st, J. L. Bird, $3; 3d, J. B. Shurtleff, Jr., $1.
Lawrence:
1st, M. Sullivan, $3; 2d, E. B. Wilder, $2; 3d, A. T. Brown, $1.
Vicar:
1st, E. B. Wilder, $3; 2d, A. T. Brown, $2; 3d, J. L. Bird, $1.
Any other variety:
1st, W. Millman, Mt. Vernon, $3; 2d, J. L. Bird, Urbaniste, $2; 3d, E. B. Wilder, Langelier, $1.

QUINCES.—Any variety:
1st, I. H. Locke, $3: 2d, E. M. Bruce, $2; 3d, G. V. Fletcher, $1.

Gratuities:—

H. J. Thayer, Cranberries, $2; W. Fenno, Collection of Fruit, $5.

E. W. WOOD,
CHARLES F. CURTIS,
WARREN FENNO,
J. WILLARD HILL,
JOHN ASH.
} *Committee on Fruits.*

REPORT OF THE COMMITTEE ON VEGETABLES FOR THE YEAR 1904.

BY MICHAEL SULLIVAN, CHAIRMAN.

Throughout the past season we have had nearly perfect climatic conditions for the growing of all the various products of the soil, and the vegetables brought in to the exhibitions have been of exceptionally fine quality.

The rules of the Society require that all the specimens shown at our exhibitions shall have been grown by the exhibitors and the committee has had occasion during the present year to strictly enforce these rules.

Although all the earlier exhibitions of the year were fully up to our usual standard it was thought that the Annual Exhibition in September exceeded in quantity and quality anything ever held before. At this exhibition excellent general collections of vegetables were shown by Warren Heustis & Son of Belmont and Edwin L. Lewis of Taunton.

At the exhibition in November, the closing one of the year, there was no lack of interest as was evident in the fine display made. This exhibition is expected to bring out the best results of the harvest of the matured crops of the year, and the many visitors were delighted with the display of fruits and vegetables shown.

Blanched celery was on the tables in great variety and the first prize, a Lowell Silver Medal, was awarded to Warren Heustis & Son of Belmont; the second prize, a Lowell Bronze Medal, was won by Edwin L. Lewis of Taunton.

An exhibit of exceedingly fine Brussels sprouts shown by Mrs. John L. Gardner (William Thatcher, gardener) was awarded a Silver Medal.

The appropriation for vegetables was $900.00 and there has been awarded in prizes and gratuities $885.00, two Silver Medals, and one Bronze Medal.

PRIZES AND GRATUITIES AWARDED FOR VEGETABLES.

1904.

JANUARY 30

RADISHES.—Four bunches:
1st, Varnum Frost, $3; 2d, W. W. Rawson, $2; 3d, A. E. Hartshorn, $1.

CAULIFLOWERS.—Four specimens:
1st, W. H. Teele, $3; 2d, E. R. Teele, $2.

CELERY.—Four roots:
1st, W. J. Clemson, $3; 2d, W. Heustis & Son, $2; 3d, W. W. Rawson, $1.

LETTUCE.—Four heads:
1st, W. W. Rawson, $3; 2d, J. C. Stone, $2; 3d, A. E. Hartshorn, $1.

MUSHROOMS.—Twenty-four specimens:
1st, H. A. Stevens Co., $3.

PARSLEY.—Two quarts:
1st, W. J. Clemson, $2; 2d, A. E. Hartshorn, $1.

TOMATOES.—Twelve specimens:
1st, James L. Little, $3; 2d, J. M. Sears, $2.

SPRING EXHIBITION.

MARCH 24, 25, 26, 27.

William J. Walker Fund.

RADISHES.—Four bunches of Turnip Rooted:
1st, A. E. Hartshorn, $3; 2d, W. W. Rawson, $2.

DANDELIONS.—Peck:
1st, A. E. Hartshorn, $3.

LETTUCE.—Four heads:
1st, W. W. Rawson, $3; 2d, J. C. Stone, $2; 3d, Geo. D. Moore, $1.

PARSLEY.—Four quarts:
1st, A. E. Hartshorn, $2.

Gratuity:—

Ed. Parker, Collection, $2.

MAY 7.

William J. Walker Fund.

ASPARAGUS.—Four bunches, twelve stalks each:

1st, Varnum Frost, $3; 2d, Ed. Parker, $2.

CUCUMBERS.—Pair of White Spine:

1st, E. M. Bruce, $3; 2d, Varnum Frost, $2; 3d, W. W. Rawson, $1.

Any other variety:

1st, E. M. Bruce, $3; 2d, E. M. Bruce, $2: 3d, E. M. Bruce, $1.

SPINACH.—Peck:

1st, Aaron Low, $3; 2d, A. E. Hartshorn, $2; 3d, J. C. Stone, $1.

DANDELIONS.—Peck:

1st, J. B. Shurtleff, Jr., $3; 2d, Varnum Frost, $2; 3d, A. E. Hartshorn, $1.

RHUBARB.—Twelve stalks, open culture:

1st, Ed. Parker. $3; 2d, A. E. Hartshorn, $2; 3d, J. C. Stone, $1.

LETTUCE.—Four heads:

1st, J. C. Stone, $3; 2d, W. W. Rawson, $2.

Gratuity:—

Aaron Low, Collection of Seedling Potatoes, $5.

RHODODENDRON EXHIBITION.

JUNE 4, 5.

Theodore Lyman Fund.

BEETS.—Twelve specimens:

1st, A. E. Hartshorn, $3; 2d, W. W. Rawson, $2.

RADISHES.—Four bunches:

1st, W. W. Rawson, $3; 2d, A. E Hartshorn, $2; 3d, E. L. Lewis, $1.

ASPARAGUS.—Four bunches, twelve stalks each.

1st, Ed. Parker, $3; 2d, A. E. Hartshorn, $2.

CUCUMBERS.—Pair:

1st, W. W. Rawson, $3; 2d, A. E. Hartshorn, $2; 3d, W. J. Clemson, $1.

LETTUCE.—Four heads:

1st, W. W. Rawson, $3; 2d, W. Heustis & Son, $2; 3d, W. J. Clemson, $1.

RHUBARB.—Twelve stalks, open culture:

1st, Ed. Parker, $3; 2d, W. Heustis & Son, $2; 3d, A. E. Hartshorn, $1.

CARROTS.—Four bunches:

1st, W. W. Rawson, $3.

Collection of vegetables, not less than four varieties:

W. J. Clemson, $5.

Gratuity:—

Aaron Low, Potatoes, $1.

Peony Exhibition.

June 11.

Gratuities:—

Aaron Low, Potatoes, $1.
W. Heustis & Son, Lettuce, $1.

Rose and Strawberry Exhibition.

June 21, 22.

Beets.—Twelve Turnip Rooted:
1st, Geo. D. Moore, $3; 2d, W. W. Rawson, $2; 3d, J. C. Stone, $1.
Onions.—Twelve specimens:
1st, E. L. Lewis, $3; 2d, W. J. Clemson, $2.
Cucumbers.—Four specimens:
1st, Geo. D. Moore, $3; 2d, W. W. Rawson, $2; 3d, J. C. Stone, $1.
Lettuce.—Four heads:
1st, E. L. Lewis, $3; 2d, A. Nixon, $2; 3d, W. W. Rawson, $1.
Peas.—Half peck, any variety:
1st, E. L. Lewis, $3; 2d, W. J. Clemson, $2; 3d, E. L. Lewis, $1.
Cabbages.—Four specimens:
1st, Geo. D. Moore, $3; 2d, W. J. Clemson, $2; 3d, W. Heustis & Son, $1.
Collection of vegetables, not less than four varieties:
E. L. Lewis, $5.

Gratuities:—

Wm. Nicholson, Tomatoes, $1.
W. J. Clemson, Collection, $2.

July 9.

Onions.—Twelve specimens:
1st, Ed. Parker, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.
Squashes.—Summer, four specimens:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, A. Nixon, $1.
Cabbages.—Four specimens:
1st, Geo. D. Moore, $3; 2d, W. Heustis & Son, $2; 3d, W. J. Clemson, $1.
Beans.—Half peck:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, Ed. Parker, $1.
Peas.—Half peck:
1st, H. R. Kinney, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.

LETTUCE.—Four heads:
1st, E. L. Lewis, $3; 2d, Ed. Parker, $2.
BEETS.—Twelve specimens:
1st, Geo. D. Moore, $3; 2d, A. E. Hartshorn, $2; 3d, Ed. Parker, $1.
CUCUMBERS.—Four specimens:
1st, Geo. D. Moore, $3; 2d, A. E. Hartshorn, $2: 3d, J. C. Stone, $1.
Collection of vegetables, not less than four varieties:
E. L. Lewis, $5.

JULY 16.

Levi Whitcomb Fund.

POTATOES.—Twelve specimens:
1st, E. L. Lewis, $3; 2d, W. J. Clemson, $2.
CABBAGES.—Four specimens:
1st, Geo. D. Moore, $3; 2d, W. Heustis & Son, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Four heads:
1st, E. L. Lewis, $3; 2d, E. L. Lewis, $2.
BEANS.—Half peck of Butter:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2.
SQUASHES.—Summer, four specimens:
1st, E. L. Lewis, $3; 2d, A. E. Hartshorn, $2; 3d, J. C. Stone, $1.
TOMATOES.—Open culture, twelve specimens:
1st, J. C. Stone, $3; 3d, A. E. Hartshorn, $1.
ONIONS.—Twelve specimens:
1st, A. E. Hartshorn, $3; 2d, Geo. D. Moore, $2; 3d, W. J. Clemson, $1.

Gratuity:—

Vincent Buitta, Collection, $1.

JULY 23.

LETTUCE.—Four heads:
1st, E L. Lewis, $2.
BEANS.—Four quarts, any variety:
1st, Wm. Whitman, $3; 2d, Joseph Thorpe, $2; 3d, E. L. Lewis, $1.
PEAS.—Four quarts, any variety:
1st, H. R. Kinney, $3; 2d, Joseph Thorpe, $2; 3d, H. R. Kinney, $1.
SWEET CORN.—Twelve ears, any variety:
1st, Geo. D. Moore, $3; 2d, J. C. Stone, $2; 3d, W. J. Clemson, $1.
ONIONS.—Twelve specimens, any variety:
1st, Geo. D. Moore, $3; 2d, E. L. Lewis, $2; 3d, W. J. Clemson, $1.
TOMATOES.—Twelve specimens, open culture:
1st, E. A. Clark, $3; 3d, J. C. Stone, $1.

JULY 30.

POTATOES.—Twelve specimens:
1st, E. L. Lewis, $3; 2d, J. W. Burns, $2; 3d, E. L. Lewis, $1.
SQUASHES.—Three specimens:
1st, W. Heustis & Son, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.
SWEET CORN.—Twelve ears:
1st, Geo. D. Moore, $3; 2d, Geo. D. Moore, $2; 3d, W. J. Clemson, $1.
TOMATOES.—Twelve specimens:
1st, Mrs. Frank Carey, $3; 2d, J. C. Stone, $2.
ONIONS.—Twelve specimens:
1st, E. L. Lewis, $3; 2d, Geo. D. Moore, $2; 3d, W. J. Clemson, $1.
BEANS.—Any variety, four quarts:
1st, Joseph Thorpe, $3; 2d, Wm. Whitman, $2.

Gratuities:

W. Heustis & Son, Cabbages, $1.
Vincent Bulitta, Collection, $1.

AUGUST 6.

SQUASHES.—Marrow, three specimens:
1st, W. Heustis & Son, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.
CABBAGES.—Four specimens:
1st, W. Heustis & Son, $3; 2d, W. Heustis & Son, $2; 3d, A. E. Hartshorn, $1.
BEANS.—Horticultural, four quarts:
1st, Ed. Parker, $3; 2d, Joseph Thorpe, $2; 3d, E. L. Lewis, $1.
SWEET CORN.—Twelve ears:
1st, W. J. Clemson, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.
TOMATOES.—Twelve specimens:
1st, J. C. Stone, $3; 2d, Joseph Thorpe, $2; 3d, E. L. Lewis, $1.
ONIONS.—Twelve specimens:
1st, E. L. Lewis, $3; 2d, Geo. D. Moore, $2; 3d, W. J. Clemson, $1.
CARROTS.—Twelve specimens:
1st, E. L. Lewis, $2; 2d, E. L. Lewis, $1.

Gratuities:—

Aaron Low, Prodigious Peas, $1.
Geo. R. Hellier, Erfurt Frame Cucumbers, $1.

AUGUST 13.

CARROTS.—Twelve specimens:
1st, E. L. Lewis, $3; 2d, E. L. Lewis, $2; 3d, H. R. Kinney, $1.
MELONS.—Four specimens:
1st, A. E. Hartshorn, $3; 2d, A. Nixon, $2.

ENDIVE.—Four specimens:
1st, Ed. Parker, $3; 2d, E. L. Lewis, $2; 3d, Vincent Builta, $1.
SWEET CORN.—Twelve ears:
1st, A. E. Hartshorn, $3; 2d, Vincent Builta, $2; 3d, F. J. Kinney, $1.
EGG PLANTS.—Four specimens:
1st, J. C. Stone, $3; 2d, Ed. Parker, $2; 3d, A. E. Hartshorn, $1.
TOMATOES.—Twelve specimens:
1st, Ed. Parker, $3; 2d, A. E. Hartshorn, $2; 3d, J. C. Stone, $1.
ONIONS.—Twelve specimens:
1st, E. L. Lewis, $3; 2d, Geo. D. Moore, $2; 3d, A. E. Hartshorn, $1.
SQUASHES.—Marrow;
1st, W. Heustis & Son, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.
Collection of vegetables, not less than four varieties:
E. L. Lewis, $5.

Gratuities:—

J. H. Fletcher, Cucumbers, $1.
Geo. D. Moore, Celery, $1.
Vincent Builta, Collection, $1.

AUGUST 20.

POTATOES.—Twelve specimens, any variety:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, New Queen, $2; 3d, E. L. Lewis, Rose, $1.
ONIONS.—Twelve specimens:
1st, E. L. Lewis, $3; 2d, Geo. D. Moore, $2; 3d, A. E. Hartshorn, $1.
MELONS.—Four specimens:
1st, Varnum Frost, $3; 2d, A. E. Hartshorn, $2.
CELERY.—Four roots, any variety:
1st, E. L. Lewis, $3; 2d, P. Hurley, $2; 3d, Ed. Parker, $1.
LETTUCE.—Four heads:
1st, E. L. Lewis, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.
BEANS.—Two quarts, shelled:
1st, E. L. Lewis, $3; 2d, A. E. Hartshorn, $2; 3d, Joseph Thorpe, $1.
SWEET CORN.—Twelve ears of any variety:
1st, E. L. Lewis, $3; 2d, A. E. Hartshorn, $2: 3d, J. C. Stone, $1.
TOMATOES.—Twelve specimens:
1st, A. E. Hartshorn, $3; 2d, Ed. Parker, $2; 3d, J. C. Stone, $1.
PEPPERS.—Twelve specimens:
1st, E. L. Lewis, $3; 2d, E L. Lewis, $2; 3d, Ed. Parker, $1.
Collection of vegetables, not less than four varieties:
E. L. Lewis, $5.

AUGUST 27.

MELONS.—Four specimens:
1st, Varnum Frost, $3; 2d, A. E. Hartshorn, $2; 3d, A. Nixon, $1.
CABBAGES.—Three of any variety, trimmed:
1st, A. E. Hartshorn, $3; 2d, Mrs. J. L. Gardner, $2; 3d, E. L. Lewis, $1.
CAULIFLOWERS.—Four specimens:
1st, W. H. Teele, $3; 2d, DeSouza Bros., $2.
CELERY.—Four roots:
1st, E. L. Lewis, $3; 2d, P. Hurley, $2; 3d, W. J. Clemson, $1.
BEANS.—Two quarts of Lima:
1st, E. L. Lewis, $3; 2d, W. J. Clemson, $2.
NATIVE MUSHROOMS.—Named collection of not less than five edible varieties:
1st, Boston Mycological Club, $3; 2d, Mrs. H. B. Grinnell, $2.
TOMATOES.—Twelve specimens:
1st, A. E. Hartshorn, $3; 2d, Ed. Parker, $2; 3d, Carl Blomberg, $1.
ONIONS.—Twelve specimens:
1st, E. L. Lewis, $3; 2d, Geo. D. Moore, $2; 3d, W. J. Clemson, $1.
SQUASHES:
1st, W. Heustis & Son, $3; 2d, F. E. Coolidge, $2; 3d, A. E. Hartshorn, $1.
Collection of vegetables, not less than four varieties:
1st, E. L. Lewis, $5.

Gratuity:—

Aaron Low, Collection, $1.

ANNUAL EXHIBITION.

SEPTEMBER 22, 23, 24, 25.

CARROTS.—Twelve long Orange:
1st, E. L. Lewis, $3.
Twelve Intermediate:
1st, Ed. Parker, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.
POTATOES.—Twelve Hebron:
1st, E. L. Lewis, $3; 2d, S. B. Bigelow, $2; 3d, W. J. Clemson, $1.
Twelve Rose:
1st, E. L. Lewis, $3; 2d, W. J. Clemson, $2.
Twelve of any other variety:
1st, Elias L. Wheeler, Green Mountain, $3; 2d, A. Nixon, Delaware, $2; 3d, Chas. Scully, Queen, $1.
SALSIFY.—Twelve specimens:
1st, W. J. Clemson, $3; 2d, Ed. Parker, $2; 3d, A. E. Hartshorn, $1.

TURNIPS.—Twelve Flat:
1st, E. L. Lewis, $3; 2d, Ed. Parker, $2.
Twelve Swedish:
1st, Joseph Thorpe, $3; 2d, Mrs. J. L. Gardner, $2.

ONIONS.—Twelve Danvers:
1st, J. B. Shurtleff, Jr., $3; 2d, E. M. Bruce, $2; 3d, Fred Cole, $1.
Twelve Red:
1st, E. M. Bruce, $3; 2d, Ed. Parker, $2; 3d, E. L. Lewis, $1.
Twelve White:
1st, E. M. Bruce, $2; 2d, Geo. F. Wheeler, $1.

SQUASHES.—Three Bay State:
1st, E. L Lewis, $3; 2d, A. E. Hartshorn, $2; 3d, Geo. F. Wheeler, $1.
Three Hubbard:
1st, Geo. F. Wheeler, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.
Three Hybrid Turban:
1st, Geo. F. Wheeler, $3; 2d, Wilfrid Wheeler, $2; 3d, A. E. Hartshorn, $1.
Three Marrow:
1st, W. Heustis & Son, $3; 2d, J. C. Stone, $2; 3d, E. L. Lewis, $1.

CUCUMBERS.—Pair of White Spine:
1st, W. W. Rawson, $4; 2d, A. E. Hartshorn, $3; 3d, E. L. Lewis, $2.
Pair of any other variety:
1st, E. L. Lewis, $3; 2d, Joseph Thorpe, $2.

MELONS.—Four specimens:
1st, A. E. Hartshorn, $3; 2d, Taunton Asylum, $2; 3d, E. L. Lewis, $1.

WATERMELONS.—Two specimens:
1st, Joseph Thorpe, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.

BRUSSELS SPROUTS.—Half peck:
1st, A. E. Hartshorn, $3; 2d, W. J. Clemson, $2.

CABBAGES.—Three Drumhead, trimmed:
1st, H. R. Kinney, $3; 2d, A. E. Hartshorn, $2; 3d, W. H. Teele, $1.
Three Savoy, trimmed:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2.

CAULIFLOWERS.—Four specimens:
1st, W. H. Teele, $4; 2d, DeSouza Bros., $3; 3d, E. R. Teele, $2.

CELERY.—Best kept during the exhibition, four roots of Paris Golden:
1st, A. Nixon, $5; 2d, Taunton Asylum, $3; 3d, W. J. Clemson, $2.
Any other variety:
1st, Taunton Asylum, White Plume, $5; 2d, Joseph Thorpe, $3; 3d, A. Nixon, $2.

ENDIVE.—Four specimens:
1st, W. J. Clemson, $3; 2d, A. Nixon, $2; 3d, A. E. Hartshorn, $1.

LETTUCE.—Four heads:
1st, Taunton Asylum, $3; 2d, Joseph Thorpe, $2; 3d, A. Nixon, $1.

PARSLEY.—Two quarts:
1st, Ed. Parker, $2; 2d, Taunton Asylum, $1.
CORN.—Sweet, twelve ears:
1st, E. L. Lewis, $3; 2d, E. L. Lewis, $2; 3d, Geo. F. Wheeler, $1.
EGG PLANTS.—Four Round Purple:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, Taunton Asylum, $1.
TOMATOES.—Twelve Aristocrat:
1st, Taunton Asylum, $3; 2d, Geo. F. Wheeler, $2; 3d, Aaron Low, $1.
Twelve Stone:
1st, Taunton Asylum, $3; 2d, E. L. Lewis, $2; 3d, Joseph Thorpe, $1.
Twelve of any other variety:
1st, Aaron Low, $3; 2d, J. Reade, $2; 3d, Joseph Thorpe, $1.
PEPPERS.—Twelve specimens of Squash:
1st, E. L. Lewis, $3; 2d, M. Sullivan, $2; 3d, Geo. W. Jameson, $1.
Any other variety:
1st, E. L. Lewis, $3; 2d, Taunton Asylum, $2; 3d, E. L. Lewis, $1.
CULINARY HERBS, GREEN.—Collection, named:
1st, A. Nixon, $3; 2d, Taunton Asylum, $2.
Collection of vegetables, not less than ten varieties:
1st, E. L. Lewis, $10; 2d, W. Heustis & Son, $8.

Gratuities:—

Mrs. E. M. Gill, Collection, $2.
Aaron Low, Collection, $2.
Ed. Parker, Collection, $2.
W. W. Rawson, Collection, $1.

CHRYSANTHEMUM EXHIBITION.

NOVEMBER 3, 4, 5, 6.

Special Prizes.

CELERY.—Eight roots, commercial grown:
1st, W. Heustis & Son, the Lowell Silver Medal; 2d, E. L. Lewis, the Lowell Bronze Medal.

Regular Prizes.

PARSNIPS.—Twelve specimens of Long Smooth:
1st, W. J. Clemson, $3; 2d, E. L. Lewis, $2; 3d, Geo. D. Moore, $1.
Twelve specimens of Hollow Crown:
1st, W. H. Teele, $3; 2d, W. J. Clemson, $2; 3d, E. L. Lewis, $1.
SALSIFY.—Twelve specimens:
1st, W. J. Clemson, $3; 2d, Ed. Parker, $2; 3d, A. E. Hartshorn, $1.

CUCUMBERS.—Pair:

1st, Frank Pierce, $3; 2d, W. W. Rawson, $2.

CABBAGES.—Three Red, trimmed:

1st, E. L. Lewis, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.

Three Savoy, trimmed:

1st, E. L. Lewis, $3; 2d, Mrs. J. L. Gardner, $2; 3d, A. E. Hartshorn, $1.

BRUSSELS SPROUTS —Half peck:

1st, Mrs. J. L. Gardner, $3; 2d, A. E. Hartshorn, $2; 3d, Ed. Parker, $1.

CAULIFLOWERS.—Four specimens:

1st, W. H. Teele, $3; 2d, Estate of C. M. Handley, $2; 3d, E. R. Teele, $1.

CELERY.—Four roots of Pascal:

1st, Ed. Parker, $3; 2d, W. W. Rawson, $2; 3d, Geo. D. Moore, $1.

Any other variety:

1st, Ed. Parker, $3; 2d, W. Heustis & Son, $2; 3d, E. L. Lewis, $1.

ENDIVE.—Four specimens:

1st, A. E. Hartshorn, $3; 2d, Taunton Asylum, $2; 3d, Ed. Parker, $1.

LETTUCE.—Four heads:

1st, W. W. Rawson, $3; 2d, J. C. Stone, $2; 3d, Geo. D. Moore, $1.

CORN —Yellow or Field, twenty-five ears, traced:

1st, Abel F. Stevens, $3; 2d, Ed. Parker, $2; 3d, E. M. Bruce, $1.

TOMATOES.—Twelve specimens, grown under glass:

1st, A. Nixon, $3; 2d, Eben D. Jordan, $2; 3d, A. E. Hartshorn, $1.

Collection of vegetables, not less than four varieties:

1st, E. L. Lewis, $8; 2d, A. E. Hartshorn, $5.

Gratuities:—

J. B. Shurtleff, Jr., Hubbard Squash, $1.

Mrs. J. L. Gardner, Brussels Sprouts, a Silver Medal.

MICHAEL SULLIVAN,
AARON LOW,
J. C. STONE,
WALTER RUSSELL,
W. H. HEUSTIS.

Committee on Vegetables.

REPORT OF THE COMMITTEE ON GARDENS FOR THE YEAR 1904.

BY CHARLES W. PARKER, CHAIRMAN.

From the beginning of the Society's history the encouragement of ornamental gardening has been a marked feature of its work, and the advance made in this line of horticultural progress, and the general improvement manifest in suburban and rural places during this period attest the value of this department of the Society's endeavors.

In recent years, however, there has been an increased development of another branch of the subject, that of gardens under glass, or greenhouses, the importance of which is illustrated in the present report, where, out of ten invitations to the committee, seven have been for the inspection of greenhouses devoted to flower or vegetable culture, and two only for the general visitation of estates. Possibly, this result may be owing to the arrangement of the schedule, but it is certain that the culture of flowers, fruits, and vegetables under glass, especially for commercial purposes, is making rapid growth in this and other states.

Early in the year the committee issued a special circular setting forth the objects for which it was established and calling attention to the prizes offered for the current season.

An account of the visits made and a list of the awards given are herewith submitted.

Walter Hunnewell's Estate, Wellesley.

The first visit of the committee was made on June 7 to the Hunnewell Estate at Wellesley. Although the special object in view was the inspection of the rhododendron plantations, then in the perfection of their magnificent bloom, the various other gardens of flowering plants were noted with interest. The noble trees on

the estate, together with the great stretches of lawn, formed a landscape of unusual beauty, and the Italian garden on the lake border added to the picturesqueness of the place. The numerous greenhouses with their great variety of tropical foliage plants, palms, orchids, ferns, and fruits were also inspected.

Frequently described in these reports in past years, this grand estate loses none of its interest as the years go by, and its fine condition reflects credit upon the head gardener, T. D. Hatfield.

Mrs. John L. Gardner's Estate, Brookline.

The next visit was made on June 13 to the Estate of Mrs. John L. Gardner of Brookline which is entered for the Hunnewell Triennial Premium "for an estate of not less than three acres which shall be laid out with the most taste, planted most judiciously, and kept in the best order for three consecutive years." The grounds of this estate, which comprise an area of about thirty acres, are disposed in broad lawns, bordered by fine old trees and thickets of shrubbery among which rhododendrons abound, open gardens of flowers, greenhouses for palms, orchids, fruits, and tropical plants, an Italian garden, and the stately, old-fashioned mansion house. Situated upon high land, a fine outlook over the surrounding country to the sea is offered at several points.

The estate combines in one harmonious whole, illustrations of the various types of landscape gardening; the formal and the natural are here represented but neither infringes upon the other.

The visitors were greatly interested and pleased with the appearance of the place as, under the guidance of the head gardener, William Thatcher, they rambled leisurely over the grounds. The estate was favorably reported upon for the first of the three years' test required.

N. B. White's Vineyard, Norwood.

On June 27 the committee visited the vineyard of N. B. White at Norwood to inspect his vines then in flower and young fruit. For thirty years, Mr. White has been engaged in experimental work in the hybridization of the grape, and has succeeded in producing several new varieties that have become of commercial

value. Of these special mention may be made of the Amber Queen, a variety similar to the Delaware, the Bay State, and the International. Some of his more recent productions are the Numbers 6 and 9, and the King Philip, the latter especially promising.

The King Philip is now six years from the seed and has fruited for the last three years. It is a combination of *labrusca*, *riparia*, and *vinifera*, and the fruit closely resembles the Black Hamburg but with a more sprightly flavor. A peculiar feature of its composition is that the fruit most resembles the *vinifera* (or foreign grape), while the vine most resembles the native species, *labrusca* and *riparia*. It is perfectly hardy and the fruit is said to be a good keeper. The berries as a rule have but one seed which is a desirable quality. The King Philip grape has a future before it if no weakness or other defects manifest themselves during its further development.

W. G. Winsor's Dahlia Garden, Brockton.

September 22 the committee visited the dahlia garden of W. G. Winsor at Brockton. In this section of Plymouth County are to be found numerous growers of this popular flower, and the extent to which its cultivation is carried is truly surprising, fields of several acres, in many instances, being devoted to it. In fact, it has developed into a notable industry in this section. A visit to such a field of dahlias, arrayed in its brilliant coloring, on a sunny September day, is a delightful experience. Mr. Winsor's garden, though not of as large area as some others — covering a little less than an acre — is noteworthy because of the quality of the plants grown and the distinctiveness of the varieties. Quality and not quantity is the object sought for. His collection of ninety varieties of the Cactus class contains some of the latest English and French productions, and is a display of wonderful beauty. In this class the visiting committee noted with especial interest the G. H. Jackson, a rich garnet; the Sir D. Gustave Douson, a light scarlet, and sometimes thirty inches in circumference; the Victor Vassier, a sulphur yellow; the Madame Keller, a variegated pink; the Mrs. De Luca, a handsome yellow; the J.

Weir Fife, ruby colored; the Imperator, garnet; and the Pretoria, pale red.

One of the novelties of the season in this class was the W. F. Balding, a new English variety, amber colored on the margins, abruptly changing to yellow in the center.

The Cactus varieties of the dahlia are undoubtedly the most popular of all, and it is doubtless due to the development of these forms that the dahlia owes its present popularity.

Other classes, however, are not neglected in Mr. Winsor's garden. The Decorative contains many beautiful examples, notably the Favorite, white tinged with lavender, one of his own seedlings; the Lady White; the Calypso, a handsome yellow; and the Minos, a deep maroon, and one of the most desirable.

In the Show class, admiring attention was directed to the Thomas Pendered, one of the best yellows, very large and heavy; and the Robert Bromfield, a profuse bloomer.

In the Collerette class, a rather gaudy novelty was the Vice President Viger; but the varieties in this class are not considered especially desirable, and are going out of general cultivation.

Mr. Winsor has originated thirty seedlings of his own, and has in all under cultivation over three hundred distinct varieties. The present season has been somewhat unfavorable for dahlia growing, the tubers having been injured in some way during the past winter, so that the production of flowers has been less than usual.

Morton F. Plant's Estate, Groton, Conn.

October 28 the committee visited the Morton F. Plant Estate at Groton, Connecticut, for the purpose of inspecting houses of chrysanthemums, carnations, and roses which had been entered in competition for the awards of the Society by the superintendent and head gardener, Thomas W. Head.

This estate comprises about forty acres situated at the mouth of the Thames River and commands a fine outlook over land and sea. A magnificent stone mansion of Elizabethan architecture, built of the native granite of the ledge beneath it, rises as a prominent feature of the estate. The superintendent's lodge, the

stable, barn, and gateways are all of stone and architecturally in harmony with the great mansion itself. The grounds are in process of development and will be laid out to include all the various features of the landscape gardener's art now considered necessary accompaniments for such an estate. Many shrubs and trees have been planted already and large areas prepared for lawns. When all has been completed it will take rank among the notable estates of the country.

The committee found here a large area of glass of the most approved, modern construction, and everything in the best order and condition. The quantity and luxuriance of bloom and foliage was notable, especially when it is considered that everything was planted out in the houses only the preceding spring.

In the rose house were about six hundred plants, comprising numerous varieties, about one-half being grafted, the other half grown on own roots. Among those in flower were noted especially the Bride, Golden Gate, and Ivory, of the white-flowered kinds; the Bridesmaid in delicate rose; the Perle de Jardin, yellow; and the new Gen. MacArthur, bright red and very fragrant.

The carnation house contained a large number of the best varieties, including Enchantress, Mrs. Patten, Nelson Fisher, Roosevelt, Bride, Lawson, Maceo, Lillian Pond, Mrs. Bradt, and the yellow Golden Beauty.

In the house of chrysanthemums grown on benches were fifty-two varieties grown to single blooms, forming a collection of great interest both to the specialist and to the ordinary observer. The house of chrysanthemums grown in pots and arranged for general effect with other plants presented a beautifully blended array of colors. There were two hundred pots in this house.

There was also a very attractive house of foliage plants.

Edward A. Clark's Estate, Jamaica Plain.

October 31 the estate of Edward A. Clark at Jamaica Plain was visited. The special object of the visit was to inspect a house of chrysanthemums grown on benches, and houses of carnations and roses.

In the chrysanthemum house were about four hundred plants grown to a single flower comprising about fifty varieties of the

best sorts. This house was thirty by twenty-five feet and presented a very attractive appearance.

The rose house was thirty-five by nineteen feet and contained many of the best varieties, mostly grafted stock, and planted the last week in June.

The carnation house contained about five hundred plants of the leading kinds, making a very fine display.

The gardener of this estate is William A. Riggs, under whose skilful management such results are made possible.

Mrs. C. C. Converse and Mrs. Lester Leland Estate, Malden.

November 1 the committee was invited to visit the estate of Mrs. C. C. Converse and Mrs. Lester Leland at Malden to inspect houses of palms and foliage plants, and houses of chrysanthemums grown on benches and in pots. The house of chrysanthemums in pots presented a most brilliant appearance and was a remarkable collection of notable varieties, magnificently grown. One plant, the Garza, of the Anemone class, by actual count bore 874 flowers. This house was one hundred and twenty by twenty feet and contained 23 plants trained in ten-inch pots.

The house grown to specimen blooms had 165 varieties and contained a most pleasing assortment. These were planted in May. The palm house contained fifteen species of palms, besides a large and beautiful assortment of ferns, crotons, dracænas, pandanus, and orchids in splendid condition.

The head gardener of the estate, David F. Roy, has shown a high order of horticultural knowledge and ability in producing such results as are shown in these houses.

Field Meeting at Arlington.

On the afternoon of November 5, under the auspices of the committee, a public demonstration or field meeting was held at Arlington.

The object of the gathering was to call public attention to the necessity of adopting measures to check the devastation being wrought upon vegetation by the gypsy and brown-tail moths and the San José scale. Numerous appliances were exhibited suitable for this purpose, including large steam machines for use by

CHRYSANTHEMUM HOUSE OF H. H. ROGERS FAIRHAVEN MASS.

towns and public parks, as well as various smaller apparatus for private estates. The attendance at the meeting was large and was constituted almost wholly of persons, both men and women, who were personally interested in the work of protecting our forest and shade trees from what is a dangerous menace.

Tree wardens from many towns in Massachusetts were present to obtain information as to the best methods of combating these pests. Prof. A. H. Kirkland gave descriptions of the insects and explained the working of the various appliances.

This meeting will doubtless have a beneficial effect and was certainly a success in accomplishing the objects for which it was held. To Prof. Kirkland is due much praise for the skilful and effective manner in which the matter was handled, as well as for his very pleasing and instructive remarks and explanations.

Mr. John A. Pettigrew, Superintendent of the Boston Park Department was present, and assisted very materially by the exhibition of the large power sprayer used by the City of Boston.

To Messrs. H. L. Frost of Arlington and A. M. Cobb of Malden are due the thanks of the committee for services rendered; and their interest in the occasion as shown by the exhibition of apparatus for spraying and explanation of methods of working them is much appreciated.

H. H. Rogers' Estate, Fairhaven.

November 8 the committee was invited to visit the H. H. Rogers' estate at Fairhaven to inspect the house of chrysanthemums grown in pots and entered for competition by the head gardener, James Garthley. Of the estate itself, it is only necessary to mention here that it received in 1903 the Hunnewell prize of the Society for the best estate in New England "laid out with the most taste, planted most judiciously, and kept in the best order for three consecutive years." It certainly has not deteriorated since that award was made.

The special interest of the visiting committee on this occasion centered in the greenhouses and their contents, then luxuriant in tropical foliage plants and brilliant with the display of chrysanthemums. There were two houses devoted to palms, ferns, and orchids, and two to chrysanthemums and other flowering plants.

The principal house is seventy-seven feet long by twenty feet wide. It contains about five hundred plants grown in six and seven-inch pots and comprises about forty of the choicest varieties known to horticulturists. They have the merit of being grown to a reasonable height, allowing the observer to look down upon them, and the effect is very fine. The arrangement of the plants in a bedding of ferns and trailing vines was artistic and attractive.

Of especial interest to the committee were the varieties General A. Maceo, a finely grown plant of a rich garnet color; the William H. Lincoln, a handsome yellow and very floriferous; and the Golden Wedding, a plant with twenty flowers, grown in a seven-inch pot.

Mr. Garthley has originated a new variety in the Anemone class which he has named the Victoria. It is a hybrid between the daisy and the Garza and is a valuable acquisition.

Joseph H. White's Estate, Brookline.

November 10 the committee visted the Joseph H. White place at Brookline which was entered for the prizes of the Society for a house of roses and a house of palms and foliage plants. The estate covers an area of eighteen acres, situated on a hillside sloping towards the south, and commands grand views of the surrounding country even to the sea. A luxuriant growth of English ivy on the stone walls and on the house, and the noble American elms on the extensive lawns attracted the interested attention of the committee.

In the palm house, in addition to the numerous varieties of palms, were many species of ferns, orchids, and other exotics. An unusually fine specimen of the ceriman (*Monstera deliciosa*) was noted, its large perforated leaves and otherwise grotesque aspect rendering it a curious illustration of the vagaries of vegetable growth, and brought to mind a conception of what a tropical jungle might be. It is a climbing plant and produces an edible fruit, somewhat resembling a banana but with a pineapple flavor. This house was lofty in dimensions and very well kept and the plants were in fine condition.

The rose house was forty-two feet by fourteen feet, with curvilinear roof, and was well filled with two-year old plants, all

grafted stock, mostly of the Bride, Bridesmaid, Wootton, and Liberty varieties.

The committee was much pleased with the fine condition of the greenhouses, the healthy appearance of the plants, and the evidence of superior cultivation on the part of James Wheeler, the superintendent and head gardener of the estate.

Mrs. John L. Gardner's Estate, Brookline.

November 17 the committee again visited the Mrs. John L. Gardner estate at Brookline; this time to view a house of palms and foliage plants which had been entered by William Thatcher, the head gardener of the estate. The palms were not large, nor of many varieties, but the great number of beautiful foliage plants rendered the place a most attractive one to visit. The plants were in fine condition and showed intelligent care and experience on the part of the gardener.

Among the plants conspicuously noted were the *Bertolonia Van Houttei*, *Ficus repens*, growing on a wall and with it the shingle plant (*Photos*), its large flat leaves adhering in a manner well suggestive of its popular name. There was also a fine plant in flower of *Cobea scandens*. *Solandra lævis*, still in flower, was notable, as well as a luxuriant specimen of *Acanthus mollis* in shining green foliage. A specimen of *Gloriosa superba* (the climbing lily) just past flowering attracted attention.

H. A. Stevens Co.'s Mushroom Cellar, Islington.

December 9 the committee visited the mushroom cellar of H. A. Stevens Company at Islington. It occupies the entire space of a barn cellar about forty by sixty feet, with close laid stone and brick walls. In this space the mushrooms of the ordinary market variety were growing in the greatest profusion, many of them being of more than ordinary market dimensions. Mr. Stevens took out of these beds, in the week previous to the committee's visit, seventy-five pounds, and his daily product is from eight to ten pounds for which there is always a ready market.

The committee inspected also, with much pleasure, the fine greenhouses devoted exclusively to the culture of the carnation;

in all eight thousand plants of the most prominent commercial varieties. By request of the committee, Mr. Stevens has prepared a description of his method of raising mushrooms which is herewith published.

THE CULTIVATION OF MUSHROOMS IN A BARN CELLAR WITH STEAM HEAT.

BY H. A. STEVENS.

First, take horse droppings fresh from the stable and let it heat up in a pile for two or three days; then turn it over and let it stand for two days more; then turn again, adding one part good loam to three parts manure, letting it heat up again; then, if not too hot, put it in the bed about eight or ten inches thick, and tramp it down well. In two or three days plant the spawn, making a small hole not more than one and one-half inches deep in the manure with a trowel; then tramp down again and add a layer of good loam about one inch deep all over the bed. In planting the spawn, place small pieces six or eight inches apart in the bed, and when all is finished, take a board, lay it on the top of the bed and tramp it level; then watch that the bed does not get dry on the surface. If it shows signs of drying sprinkle with water that has been kept standing in the cellar, being careful not to get the bed too wet. Keep the temperature of the cellar at 53 degrees, not lower than 45 nor above 55 degrees.

The pure culture spawn made in Chicago is used.

The Prizes and Gratuities awarded this year are as follows:

Special Prizes from the John A. Lowell Fund.

For the best houses of Chrysanthemums arranged for effect with other plants in pots:

First, Mrs. C. C. Converse and Mrs. Lester Leland	$40 00
Second, H. H. Rogers	20 00

For the best houses of Chrysanthemums grown on benches:

First, Morton F. Plant	40 00
Second, Mrs. C. C. Converse and Mrs. Lester Leland	20 00

Society's Prizes.

For the best house, not commercial, of Palms and Foliage Plants:

First, Joseph H. White	30 00
Second, Mrs. John L. Gardner	20 00

For the best house, not commercial, of Carnations:

First, Morton F. Plant	30 00
Second, Edward A. Clark	20 00

For the best house, not commercial, of Roses:

First, Morton F. Plant	30 00
Second, Joseph H. White	20 00

Gratuities.

W. G. Winsor, for Dahlia Garden	10 00
N. B. White, for his efforts in hybridizing and improving the Grape	10 00
T. D. Hatfield for superior care in maintaining the standard of the Hunnewell Estate	10 00
H. A. Stevens Company, for cultivation of Mushrooms . . .	10 00

Charles W. Parker, for Estate at Marblehead Neck, Honorable Mention.

Respectfully submitted,

CHARLES W. PARKER,
DAVID F. ROY,
JOHN A. PETTIGREW,
W. W. RAWSON,
ARTHUR H. FEWKES,
OAKES AMES,
PATRICK NORTON,
HENRY P. WALCOTT.

Committee on Gardens.

SCHOOL GARDENS AT FAIRHAVEN MASS.

REPORT OF THE COMMITTEE ON SCHOOL GARDENS AND NATIVE PLANTS FOR THE YEAR 1904.

BY HENRY SAXTON ADAMS, CHAIRMAN.

In many ways the past year has been a successful one. We have begun to recognize and encourage the home-garden movement; we have had a successful exhibition of children's herbariums; and we have had abundant competition at all the exhibitions of native plants and ferns, in this respect a marked improvement over the previous year.

Early in the year the committee sustained a great loss in the resignation of Mr. Henry Lincoln Clapp who had served for fourteen successful years as chairman. He has been closely identified with school-garden work and has left us many interesting reports showing the progress that has been made.. His last report shows how much has been done during the past fourteen years and we all regret that he is not able to remain on our committee.

Although the work of judging the native-plant exhibits was successfully carried on, as well as the correspondence of the committee, it was not until July that we were able to meet and elect a new chairman. This was unfortunate as it delayed printing the special circular of prizes offered through our committee. The work was taken up very reluctantly by your present chairman, feeling as he did how difficult it is to successfully carry on such important work. It is through the work of this committee that the young are helped to study plants, and we hope that a large majority of our children may be encouraged until we have a love of flowers so thoroughly instilled into their nature that they can never be happy away from them. We must start the children right, encouraging them in every possible way. Many of us realize what a benefit it would have been to us to have had this sort of help years ago, and how many pleasant hours in the garden we have lost because we did not begin early enough and with the right spirit.

Our late secretary, Mr. Robert Manning, once said to me that the Massachusetts Horticultural Society is a society whose members are either middle-aged or elderly. Think a moment and you will see how true this is. Let us start with the children and teach them to love horticultural pursuits while young in order that their years may be lengthened, for outdoor work surely helps to do so; and that perchance some may join our Society earlier than is the rule today.

A number of new problems have been taken up by the committee this year. It seems best to hastily report on the work of the year and then to consider the proposed changes for 1905. Our new prize list has been printed and contains some important changes. Let me call attention to the fact that the Native Plant Committee was this year joined with the Committee on School Gardens and Children's Herbariums under the present name. Our work divides itself into four distinct parts so that each will be reported on under its particular heading. At the end of these reports will be found a list of prizes and gratuities awarded during 1904, amounting to $225, the amount appropriated for our use.

School Gardens.

There were three entries of school gardens for prizes this year, although but two reports were received in time to compete. It was unfortunate that the third report was delayed as we would have been very glad to have awarded this garden a prize which it certainly deserved.

The work in the school gardens has been very satisfactory and shows marked advance. We feel, however, that we should have more gardens entered and we wish particularly to encourage all new gardens. School-garden work has advanced sufficiently to prove its value and we should see gardens started in all the cities and towns in the state We want to help in every possible way and hope another year to see enough new gardens started so that we shall feel forced to increase our prize list. We want to offer, at some future time, special prizes to all established gardens as a class, and to new gardens as a separate class. Until that time comes we feel that we must not allow one garden to take too many prizes and have included a special rule in our prize list to this effect.

Another important change in our rules for gardens was made this year and will be continued: it is the removal of the requirement that only native and economic plants could be grown in the gardens. The rule now allows both native and cultivated plants. Especial attention, however, should be called to the value of native trees and shrubs, as well as cultivated, for backgrounds for the plant borders. An ideal garden would have this kind of a setting with herbaceous plants, wild flowers, ferns, and annuals in front. Some part, as the center, of the garden would be laid out in beds in which the children can grow bulbs, annuals, and vegetables, each having a bed of his own.

At the next exhibition of children's herbariums we hope to exhibit pictures with drawings and papers written by the children in connection with their garden work.

The new prize list shows one important change: that is the reduction for this year of the amounts for the school-garden prizes. We hope another year to have a more generous appropriation so that we can devote more money to this work.

The first prize for 1904 was awarded to the Fairhaven School Gardens. These gardens were visited by the chairman in July and found to be in excellent condition in every way. The rows of plants were straight, there were plenty of flowers, good evidence of crops, and the weeds, although it was summer vacation, were well kept down by the children themselves, not by hired help.

The committee intends to visit, wherever possible, all gardens in the future which are entered for prizes. We have never made a special effort to do this but feel that it is only by actually seeing the gardens that we can make the best awards and keep closely in touch with the work.

The report of the Fairhaven School Gardens follows; after that that of the Groton Childen's Gardens which were considered as one garden by the committee and received second prize. The Cobbet School Garden report is also given in part, although no prize was awarded. It has made marked advancement this year and we think the report will prove of value.

Report of the Fairhaven School Gardens.

BY FRANK M. MARSH, SUPERINTENDENT OF SCHOOLS.

Encouraged by the successful results obtained the first year in the school gardens of Fairhaven, Massachusetts, the committee in charge of this department felt justified in continuing the movement which was first established here in the spring of 1903.

To speak briefly a description of the gardens of the past season (1904) is as follows. In the plot of ground containing about one-third of an acre there was room for 48 individual beds, 4 feet in width by 15 feet in length. As a background against a high fence which marked the limits of territory on the south side of the garden, the children planted corn and sunflowers, while in front of these taller plants, blue larkspur outlined the outer edge. To the east a border 4 feet wide contained a row of golden coreopsis, with pink and white candytuft on either side. On the north side there were four large beds, 15 feet by 20, devoted to the cultivation of vegetables, such as tomatoes, spinach and others. The west side was given up to the raising of the grains and grasses, such as barley, oats, rye, millet, timothy, hungarian, etc., while some space was allowed here for beds of squashes, pumpkins, and cucumbers.

The paths about the large beds were bordered with parsley and ageratum, while climbing nasturtiums concealed from view the rough edges of the east and west boundaries.

The walks running north and south were 3 feet wide, those east and west measured 2 feet in width.

In the individual beds, on one side, were planted such vegetables as radishes, corn, lettuce, beets, spinach, turnips, and beans, while the other half showed a display of flowers, as nasturtiums (dwarf), candytuft, marigolds, phlox, mignonette, balsams, and ageratum.

The method of planting these individual beds was interesting. A rope was stretched taut from the north to the south side of the plot, then, each child standing beside his own bed — with one foot on the rope to keep it straight — at a signal from the person in charge, made his furrow ready for the seed. Planting followed the distribution of the seeds, then covering and levelling of the soil; the rope was moved further on, 12 or 15 inches as space required, more furrows made, and thus the planting continued until all the beds were sown.

As there were high and low grades in the lot, considerable time was spent this spring, by the young gardeners, in grading some of the beds, so that now they are practically level. Last year the boys made a compost pile from the sods which they removed, and this year that soil was used in grading where it was necessary.

SCHOOL GARDENS AT FAIRHAVEN, MASS.

An addition to the gardens this season has been the introduction of several varieties of our most common ferns. The southwest corner was set aside for the wild garden and the boys have gone forth enthusiastically, after school and on their Saturday holiday, to the woods and roadsides in search of these underground rootstocks. They have already become familiar with the royal fern, the cinnamon, interrupted, brake, shield, sensitive, polypody, spinulose, and New York ferns, and it is hoped that another year they may extend their acquaintance and gain a wider knowledge of the life-history and interesting habits of these shade-loving plants.

The work on the gardens was assumed by pupils from the sixth, seventh, and eighth grades and was purely voluntary, being carried on outside of school hours. So enthusiastic have the little nature students been that they have devoted hours at noon, after school at night, and on Saturday mornings in their ambition to cultivate their miniature farms and to conquer the troublesome weeds.

Not alone have these young people enjoyed the fragrance and beauty of the flowers that have bloomed for them, but their friends and many others also have shared their pleasure. While some have been content to furnish the home table with fresh vegetables, other boys and girls have reaped pennies from the sale of their beans, radishes, lettuce, etc., counting perhaps a dollar or more at the close of the season as the result of their trading.

What lessons have been learned from this devotion to the soil? The young agriculturists have been taught the use of the hoe, rake, and spade; they now understand the preparation of the soil for the reception of the seed, the best method of planting, and the care that is necessary for the growth of the young plants; they have learned the value of "thinning out," of transplanting, of loosening and softening the soil about the roots of their young seedlings, and have solved many other scientific problems of like nature.

Perhaps the best results have been the awakening to the appreciation of the beautiful things in nature, a respect for the property of others, and the self-reliance that springs from the ability to produce from the soil something that can be called one's own.

The boys and girls have written some attractive articles in the classroom in which they have related their experiences in the school gardens as well as their efforts in raising flowers and vegetables at home.

Another year the committee hope to introduce some of the native shrubs such as privet, shadbush, mountain sumach, and others, and to bring to the school gardens some of our attractive wild plants, for a cultivation of the latter means a less wanton destruction of some of earth's fairest flowers.

Report of the Director of the Children's Gardens, Groton, Mass.

BY MISS ELIZABETH SEWALL HILL.

The Groton Children's Gardens are flourishing and have had a most successful and satisfactory year. In 1902 we had one garden with ten boys, in 1903, two large gardens with forty boys and girls, and this year, three large gardens with spaces for sixty young gardeners, the Mill District garden being a new one.

During the winter we had a camera club in place of the garden club for I do not intend to talk gardening all the year round. I think the eight months we work in the garden are enough, but a week seldom passed in which some child did not discuss garden methods, plans, or improvements.

The first of March I gave packages of tomato seeds to the children and many plants were started, 250 being afterward transplanted to the gardens. From March 1 until we began the children were clamoring for gardens. "When will gardening begin?" was asked continually.

THE GROTON GARDENS ON LAWRENCE PLAYGROUND.

June 18 we began planting. The land was so wet it could not be made ready until that date. We went to work with a will and in four days planted everything in every garden but one which was saved for a boy who was not able to come at that time. It was a handsome garden; the cucurbits and sunflowers looked especially good. We mixed most of the fertilizer ourselves and I never saw vegetables grow so fast. Summer squashes and beans were edible in six weeks; turnips were two inches through in the same time; and radishes matured in fourteen days. A dealer in fertilizers sent us three bags of the pure material, one of nitrogen, one of potash, and one of phosphorus. In one part of the garden those who wished had an experiment station as we wanted to find out what sort of food was needed by the soil. In one space nitrogen was used alone, in another, potash, in a third, phosphorus, in a fourth, nitrogen and potash, in a fifth, nitrogen, potash, and phosphorus, in a sixth, nitrogen and phosphorus, and in a seventh, phosphorus and potash. We raised good things in this experimental garden, but the best was with the three together, equal parts of phosphorus and potash with a little less nitrogen. Not much nitrogen was needed as a general thing.

Those who wished kept notebooks with record of attendance, time of planting, of coming up, quantity raised, and anything learned in the garden; especially reports of the daily five-minute lecture I gave them on such topics as injurious insects, fertilizers, soils, etc. The gardens were

THE GROTON GARDENS ON LAWRENCE PLAYGROUND.

kept in fine order, paths weeded, and the vegetables properly thinned; and there were good attendance, good behavior, and general interest.

We have studied insects, birds, and plant life and made herbariums of flowers, ferns, mosses, and lichens. Some of the boys have aquariums for the purpose of studying the water insects, others take the darning needles, and still others, the life histories of butterflies. There is a spirit of helpfulness in the garden, helping each other pull weeds, plant, clear paths, etc. Other small children come in and are eager to help. It was very hard to decide who should have the prizes. The three judges came in at any time, looked over the gardens, and marked them very strictly. The ages of the children ranged from eight to seventeen years. Harold Woods was awarded first prize, nine others came in second, and five were awarded third prize. Those awarded first and second prizes received money; the others, photographs.

THE WEST GROTON GARDENS.

The West Groton Gardens have also done well. There were thirteen workers each having a garden 35 by 12 feet. We changed the location this year as the other was too wet to plow, and we also needed more room. All planted the same kinds of vegetables. The children had to work hard to keep out the weeds as it was new ground, but with patience and perseverance they conquered and had good gardens. The sunflowers were so tall we used them for shelter from sun and storm.

One seven-year-old boy was most devoted to his garden; every day he was in it digging and weeding or admiring it. When away on a short vacation he worried, fearing weeds would grow or something would happen to his garden. When one child was absent the others kept his weeds out.

The largest squash in all the gardens was raised here, thirty pounds; also a large pumpkin weighing twenty-six pounds. Beans, corn, and carrots did extra well, and a few peanuts were grown and matured. The dry weather affected the soil very much but as it was kept well dug the vegetables suffered very little, although newly planted seed could not germinate, making our second crop late.

One boy said "I am not working for a prize but because I like a garden." Lectures and talks were given and notebooks kept records of insects, birds, and plant life.

Among other things of interest noted was a humming bird's nest found by two of the larger boys. It was on a maple tree over the swimming hole; a most dangerous place, at least it seemed so to us. I never saw anything more touching than for this little bird to fearlessly build its nest and rear its young within a few feet of a boys' swimming place. I am glad to say that the confidence was not misplaced. We watched it from the time the nest was builded until the little ones flew away.

This garden was on private property and the owner said it made her happy to see and hear the children so much enjoying their gardens. These

gardeners were younger on the average than those of the other gardens, their ages being from six to thirteen years.

THE MILL GARDEN.

The Mill Garden was 160 x 42 feet and was on private property. The children were present every day unless unavoidably detained, which seldom occurred. We had a patch through the center of the garden with 150 feet of sweet alyssum on one side and nasturtiums on the other, giving it a beautiful appearance. The cabbages, beets, lettuce, cauliflower, and cucurbits made a pretty color scheme with the 150 feet of flowers in the foreground and corn and sunflowers in the background. We had many visitors; sometimes I would be giving a talk on insects, birds, or other subjects to an audience of forty people, ranging from two to fifty years of age. They were much interested and were proud of this garden. Fifteen children between the ages of seven and seventeen years had large gardens and there were six small ones for children four to seven years of age.

One day a cow got in and ate almost everything in two gardens and injured several others. One boy was just about discouraged and thought he would give up his garden, but after a few minutes' thought went to work and repaired the damage as best he could, replanting where needed, and came out of it as well as the others.

These three Groton gardens were all different and have been very satisfactory. The members of each visit the others and say their own is the best. The Groton Farmers' and Mechanics' Club offered prizes, as usual, for the best and largest varieties of vegetables exhibited at the Town Fair, and there was a good exhibition. Gladys Mason received the first prize, Harold Woods, the second, and Belle Munroe, the third.

A few seeds were bought, but most were given by individuals and by the Department of Agriculture at Washington. The fertilizer was given by a fertilizer company and by individuals; also the prize money was solicited from the town's people interested in the work. The tools and the salary of the director were paid for by the Village Improvement Society. There were three judges for each garden who came in at any time, making it interesting for the children who enjoyed showing their gardens, and talking over improvements, etc., with the judges. The children have worked faithfully and good results have followed.

THE MILL GARDEN. GROTON MASS.

Report of the Cobbet School Garden, Lynn, Mass.

(In part.) November 12, 1904.

BY PHILIP EMERSON, PRINCIPAL.

Encouraged by your approval of our work in 1903, the gardens of the Cobbet Grammar School were reëntered in competition this spring, and our formal report follows. Our accomplishments still fall so far short of our ideals that they seem to us of no great merit; yet we have made such marked advancement as compared with the results which last year gained the second prize that we hope to be granted some award this season. We have probably continued the development of our plans as vigorously as was consistent with the proper balance of all lines of school work, for we have been mindful of the desirability of making the garden work aid, not replace, the ordinary school pursuits.

The central feature of the year's work has been the model vegetable garden in the school yard. As soon as the ground thawed in March, the boys staked out thirteen beds on the gravel and ashes south of the school, in spots which were shaded the least, their combined area amounting to some 1,500 square feet. The work of digging out and removing the gravel, then of filling the excavations with soil and manure, took some time because interrupted by snow and rain. The loan of a dozen shovels from the Highway Department, by direction of His Honor, Mayor Eastham, enabled a considerable force of boys to work at recess and after school, however, and all beds would have been ready by early May had not some been obliged to await the coming of the school carpenter to repair the adjoining board fence.

The planting schemes for the several garden beds were sketched on large cards, with accompanying descriptions. Each bed was in the immediate charge of two boys and two girls, under the direction of the principal, but others were often eager to share the work of planting or hoeing. It was planned to grow nearly all the common vegetables and small fruits in representative varieties, that the children might become familiar with the whole range of garden products. The plans were well carried out, if one takes into account that the work was built up from the very ground this spring, and that all the labor was performed by children who were gaining skill and interest and were not already skilful or deeply interested.

Perhaps the most interesting bed was that of herbs, twenty-two three-foot rows of herbs. Heavy rains washed out the seeds at first, and some of the perennials did not germinate, but more than half the sorts of herbs grew vigorously and attracted the attention of the public. A cold frame,

Plots, a square yard in area, were planted to wheat, rye, barley, oats, buckwheat, millet, kaffir corn, field corn, broom corn, alfalfa, cow peas, rice, flax, hemp, chicory, tobacco, and cotton. Most of these crops grew well, although the partial shade prevented the fullest success with all. The cotton came into bloom in September. The alfalfa is ready for renewed vigorous growth in the spring. The chicory roots are now ready for harvesting.

It is evident that we have planned to closely relate the school garden to school studies, notably geography and nature study. From the time of the first hepatica and bloodroot until the shrubs put on their brilliant autumn foliage, and the dry seed pods rose above the snow, the garden has supplied material for drawing lessons.

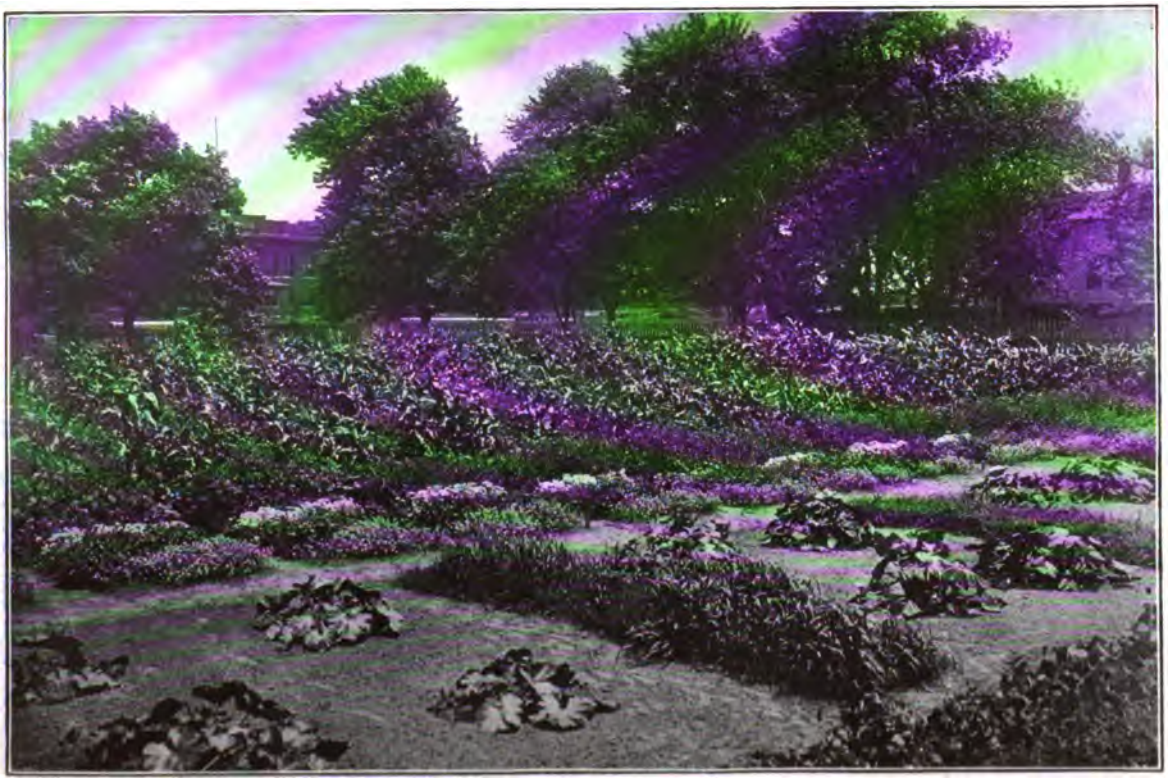
The gardens of flowers — perennials, annuals, and bulbs — have been maintained and extended. The severe winter killed some of the supposedly hardy plants. These were replaced by divisions and clumps of hardy sorts from gardens in the school district. We have commenced to give root divisions in return. In fact, our gardens of cultivated flowers are designed not alone to beautify our yard, or to familiarize the children with garden flowers of all kinds, old and new, or to instruct the children as to their proper care, but as well to place flower growing on as economic a basis as the growing of vegetables. This year hardy flowers have been started from seed, and another season the young plants, also divisions from the vigorous clumps in the garden of hardy flowers, will be either sold at a moderate price or awarded as prizes to pupils giving their home gardens the best care. The multiplying bulbs from cannas and dahlias are being used in the same way. Over a hundred gladioli have been grown this year. Many were seedlings, which cost little but produce vigorous bulbs in a year or two, for use as above.

In addition to several sorts of annuals grown from seeds, and the flowers from summer flowering bulbs, we have this year had several kinds of tender plants grown in greenhouses and planted out in the summer. Among these were two dozen plants of carnation pinks. They grew thriftily and produced many buds. Unfortunately every one knows the value of carnations for buttonhole bouquets, and the older gamins of a neighboring tenement district saw that all opening buds were picked every evening.

The past spring the policy of distributing divisions of hardy plants secured from gardens in the district was continued. Over fifty divisions of iris, and many young lilacs, for instance, are recalled now as given out for home planting, one to a pupil.

Three hundred new tulips have been secured, also several hundred narcissus, crocus, and Scilla Sibirica. Some have been permanently established among the hardy plants.

The work of the school has continued to receive the commendation of the community as expressed in the newspapers and by the comment of many individual citizens expressed to the teachers. At the annual exhibition of the Houghton Horticultural Society in September the two first



SCHOOL GARDENS AT FAIRHAVEN, MASS.

prizes offered to schools were both awarded the gardens of the Cobbet School.

We cannot claim for our work completion — probably we shall never attain our ideals — but the Cobbet gardens have, so far as we know, as broad and far-reaching aims and as varied character as any school garden. We can claim their close relation to school work in that they are based on class instruction on soils, the nature of important plants, weeds, etc., and in that the garden supplies material for illustrative use in several studies. We are making the gardens a valuable feature of the civic life of our ward in that they are teaching all passers-by as well as the children, and because they are repeated in hundreds of children's home gardens throughout the district. We hope to put the gardens now wholly on the practical basis of paying for themselves by the raising of vegetables, hardy flowers, and bulbs for sale.

While often disappointed with our work ourselves, we yet hope the thoughtful planning and hard work given the gardens may favorably impress your committee and secure some award that shall encourage the children to more faithful efforts in the coming season of 1905.

Children's Home Gardens.

We this year offered for the first time prizes for home gardens and as the offer did not appear until July, we think we have an indication of its value, since we received five entries. We hope for excellent results from our home-garden work and expect to report good progress another year.

The great value in the home garden comes where the school garden is impossible, and again after the children have had school-garden work they are prepared to have a garden at home, so in the home garden we have a natural outcome.

Perhaps a word should be said about what we mean and what we want. We want a small, well-kept garden, prepared, planted, and cared for by one child. The work may be directed by a teacher, a parent or by anyone interested but it must all be done by the child, either girl or boy.

A letter must be written describing the garden, its preparation, size, the flowers and vegetables planted, care and the crop. We will visit the gardens as far as possible and hope to see a great many well-cared-for little plots during the summer. Let the letters be short, carefully written and clear; the manner in which the letter is expressed and its appearance will be considered in awarding prizes. Children will find it desirable to keep a diary of the

garden from which to write the letter. A picture of the garden or some part of it is also required.

The new prize list increases the number of prizes offered from three to ten and we hope to see a great many entries.

As has already been mentioned, we expect to exhibit the pictures, etc., of both the school gardens and home gardens at the Exhibition of Children's Herbariums in November. Those making school-garden reports are especially requested to send with the reports pictures, drawings, essays, and other interesting matter so that we may have plenty of good material.

The home gardens at Ayer were visited early in September and while too late to be seen in their prime, the gardens showed that they had been carefully planted and cared for. It is interesting to note how the work of our committee is restricted to certain definite sections where the work with the children has been started by some interested teacher, parent, or outsider. These little colonies thrive and the work spreads. Who is willing to start new colonies in new fields? It is the starting that is required; once started the work seems to carry itself along. At Ayer the Woman's Club has taken the work up and much good is being done. The children, when not otherwise busy, are given something to do and to think about, and good results will surely follow in uplifting the people of that town.

The letters from the prize winners this year follow.

LETTER FROM HENRY L. BROWN, AYER, MASS.

FIRST PRIZE.

I have had a garden for three years. I thought I would have a large and better one so I enlarged it one hundred five square feet.

I spaded up the soil to the depth of about twelve inches and scattered the fertilizer over the top. Then I dug it up so the two were thoroughly mixed. With a rake I smoothed it all over. My garden is twenty-one feet square. Next I began to make the beds. I raised them three or four inches above the paths.

I planted corn, peas, tomatoes, lettuce, radishes, turnips, cucumbers, beets, and muskmelons.

I planted the hills of corn two feet apart and three inches deep. When the plants were six inches high I thinned the plants to three in a hill. I planted three rows of peas each ten feet long. The rows were two feet apart and the seed three inches deep. I did not thin them out at all.

The vines grew to be six or seven feet high. I planted my tomato plants two feet apart. The vines grew very rank as I had no braces. When I tried to brace them the branches had sent roots into the ground so I could not. I took a board about ten inches wide to make straight rows in which to put the lettuce seed. The lettuce did very well at first but when it began to get very hot it turned the leaves brown and the green leaves were bitter. I did not thin out my lettuce but cut the leaves from every other plant. I planted my radishes the same way as I did the lettuce. I thinned my radishes out to a plant every inch and one half. My radishes were good when they were small but when they were large worms spoiled them.

I planted my turnips the same way I did my radishes but a little deeper. I thinned them to a turnip every three inches.

Most all of my turnips grew to be very large. The skin on the bottom of the turnips looked as if they were wormy, but inside of the skin they were as white as could be.

I planted my cucumbers but they did not grow perfect; some grew almost round. I planted my beets the same way that I did my turnips, the same depth and the same distance apart. I thinned them to a beet every two inches My beets are a little late but I think they will grow to be large ones. I planted four hills of muskmelons two feet apart, and three hills came up. I thinned them down to three plants in a hill.

The following is a list of my garden produce:

Corn, 16 dozen ears; peas, 15 quarts; tomatoes, 2 bushels; lettuce, 50 heads; radishes, 8 bunches, 8 in a bunch; beets, 5 bunches, 8 in a bunch; turnips, 7 bunches, 8 in a bunch; cucumbers, 3 dozen; muskmelons, 14 good ones.

The Woman's Club arranged a garden exhibit where I sent my vegetables and got second prize on collection of raised vegetables. I kept watch of my garden and tried to keep it well weeded.

Next year I hope I can get some better seed and have a better garden to tell about.

LETTER FROM WILLIE L. PATTERSON, GROTON, MASS.

SECOND PRIZE.

I think a garden is just fine. I like to watch the plants grow. Some of the plants grow slowly and some fast. My garden contains 5,000 square feet of ground. It is 100 feet long and 50 feet wide. I used pig manure. My garden was planted the first part of May. It was planted by hills. I planted Old Colonial; it is a late corn. I had 375 hills and got on an average of eight ears off each hill, getting about 3,000 ears from five rows.

I planted my beans about the first of May. I planted the beans by hills. I had 80 quarts. I planted the black-eyed string beans. I planted the

low peas and some high ones. I sowed them in rows. I picked about 32 quarts. I had Rice's curled and plain lettuce. I do not know what kind of radish seed I had; all I know is they were very long and two inches thick. I planted the radish and lettuce the first of May. I planted parsnips, the seed was sown in rows. I had five tomato plants planted the first of May. I planted my beets the first of May in rows. I planted my cucumbers the first of May in hills; had eight hills. I planted carrots the first of May in rows.

I planted squash the first of May. They were Hubbard squash. I planted shell beans the middle of May in hills.

I got 200 heads of lettuce, 100 radishes, 150 parsnips, 32 quarts tomatoes, 200 beets, 250 carrots, 96 cucumbers, 12 turnips (experiment), 30 large Hubbard squash and 20 small ones, 12 Brussels sprouts, 128 quarts shell beans.

I did not sell a thing. I gave away 30 quarts of string beans, 20 cucumbers, 1,200 ears of corn, 10 quarts peas, 50 quarts of shell beans. My garden has learned me many lessons. It has kept my father from buying a vegetable except potatoes all summer. I have enjoyed it very much. I like it because it makes you very careful. I thank you very much for the interest which you have taken in my garden.

LETTER FROM JOHN MULLIN, AYER, MASS.

THIRD PRIZE.

I was surprised and pleased to think you came up here. I know you must be interested in gardens to come up so far to see them.

Early in the spring I began to get ready for my home garden. I dug the ground about one-half foot deep and turned it over and broke the cakes. My garden is about fifteen feet square. For fertilizer I used phosphate. Before I planted my seed I mixed some phosphate in the dirt, but too much would burn the plants. I had seven kinds of vegetables: peas, beans, beets, turnips, corn, muskmelon, and tomatoes. I planted two rows of peas about two inches deep and had about two quarts of them. My beans were fine and we had about three quarts of them. My turnips were not so good because the worms bothered them. My corn was planted side of an old shed and was not very plentiful. I had about twelve ears of corn and it was very nice. My muskmelon was soon crowded out by my tomatoes and it did not grow. My tomatoes were fine. I had about a bushel and some of them were very large.

My Indian pinks and poppies were tramped on by the coal team. My pansies were scratched up by the dog and cat. My sweet peas were good while they lasted. My marigolds were fine and I had a large bed of them single and double. My nasturtiums blossomed nicely and were large.

The exhibit came off September 14 and it was very good. I exhibited a large plate of tomatoes, large and small, for which I got first prize. I exhibited beans, beets, and corn, and a bouquet of mixed flowers, for which I got first prize for the largest variety. I have been in the school garden three years and expect to be in it next year if they have any.

HENRY L. BROWN'S GARDEN—FIRST PRIZE.

JOHN H. MULLIN'S GARDEN—THIRD PRIZE.

Children's Herbariums.

We were literally flooded with herbarium specimens at the exhibition on November 25 and 26. There were 2,316 specimens sent in, out of which the committee accepted and made awards for 1,815, as follows: 1,175 sheets flowering plants, 104 grasses and sedges, 120 ferns, 200 leaf sprays, 103 mosses, and 113 lichens. Over twenty dollars more was awarded than last year and that was not enough. We were obliged to turn aside a number of worthy sheets raising the standard considerably above other years in order to come within our appropriation. Last year about 1,100 specimens were sent in with about 60 thrown aside. This year we were obliged to discard 301 sheets, a larger proportion than before but not altogether due to hasty and poor mounting. To obviate this difficulty a number of changes have been made in our prize list.

We hope next year to have a more interesting exhibition, having introduced cultivated as well as native plants. This with a limit set on the number of sheets allowed in the easier classes to procure should give us an exhibition of higher standard in respect to quality of sheets shown and one interesting to horticulturists as well as botanists. It is hoped this will also bring the herbarium work in closer touch with the school-garden work. We expect to show pictures and other interesting material from the school-garden and home-garden prize winners. Prize cards will be put on the exhibitions, and with the proposed new arrangement of sheets which we have in mind we hope for an exhibition which will prove interesting and educational to all visitors.

The specimens exhibited were up to the standard of previous exhibitions and in some cases perhaps even better. Some of the children sent in a large number of excellent sheets showing that a great amount of time must have been spent in their preparation. We hope to have as many and fine sheets sent in next year and have planned so that we shall be able to take care of all that we receive.

In selecting sheets to send in try to send the best and most interesting. A large number of sheets representing one family, as many genera and as many species of each genus as possible always add interest to the exhibition. In selecting cultivated plants

for pressing care should be used to select plants that will dry easily, not such plants as carnations, double dahlias, roses, etc., which are likely to turn black.

Mosses and lichens have been left out of the prize list for next year. They are difficult for the children to name and we feel we must cut out something and have, therefore, cut here. The exhibits this year of these were extremely good. An interesting collection was sent in from New Westminster, B. C., made by Mr. Albert J. Hill. We are always grateful for these collections, which help to make the exhibition interesting, and will be glad to show any which may be sent.

You are reminded that the exhibition of Children's Herbariums comes the Friday and Saturday following Thanksgiving and that a visit to it will prove interesting as well as instructive.

Native Plants.

The exhibits of native plants were full and in every way very successful. Some of the committee were on hand to award prizes at each exhibition and while this work has been put on our hands by joining the Native Plant Committee of last year with our committee we think the work has been well done. Some notes on the exhibitions follow:

At the exhibition of June 4, 5, a number of plants of especial interest were exhibited. Among them specimens of *Triosteum perfoliatum* L, the first reported instance in the state, having been reported previously in New England from Connecticut only. The plant was collected at East Weymouth and exhibited by Mrs. Arthur Clark; specimens of the more common species, *Triosteum aurantiacum*, Bicknell, were also shown for comparison.

At the same exhibition *Cypripedium pubescens* and *C. parviflorum* were shown by Miss Shattuck and Mrs. Colburn. These illustrated the intergradation of the two species, the *parviflorum* now being generally regarded as a variety of *pubescens;* this point was well brought out by the specimens exhibited.

At the Exhibition of June 21–22, New Hampshire, Vermont, and central and western Massachusetts were represented by many species unfamiliar to residents of eastern Massachusetts. Especially interesting were *Baptisia australis* from Bellows' Falls,

Vt., *Botrychium lanceolatum* and *B. simplex* from Keene, N. H., and *Dalibarda repens* from Holbrook, Mass., the nearest locality to Boston at which it has ever been found.

At the exhibition of August 6, George E. Davenport made a display of thirty-seven species and varieties of ferns grown in his garden at Medford. Among them were many interesting specimens of variant forms, such as *Aspidium spinulosum*, var. *Concordianum*, *Nephrodium marginale* x *cristatum*, *Dicksonia pilosiuscula*, var. *cristata*, and *Nephrodium Goldieanum*.

A number of changes have been made in the rules for exhibitions which we hope will make the matter clearer and better for both the exhibitors and the committee. Owing to lack of funds we have been obliged to make the amount of the first prize $5 instead of $6; otherwise the prizes remain the same. We hope this will in no way deter exhibitors and regret that we are obliged to make the change.

As will have been seen, we are trying to make advances in what we hope will prove the right direction. We have the enthusiasm, as seen by the prompt attendance at exhibitions and committee meetings by the members of the committee, we have an appreciative public and we hope the Society will encourage us to further work by increasing our appropriation to meet the demands of our advance movement; unless we have an increase our work will be seriously hampered.

Prizes and Gratuities Awarded, 1904.

SCHOOL GARDENS.

Fairhaven School Gardens, first prize	$15 00
Children's Gardens, Groton, second prize	12 00

HOME GARDENS.

Henry L. Brown, Ayer, first prize	$5 00
William L. Patterson, Groton, second prize	3 00
John H. Mullin, Ayer, third prize	2 00

CHILDREN'S HERBARIUMS.

Elsie Bailey, Groton, 44 flowering plants	$1 25
Edna C. Brown, Ayer, 33 flowering plants	1 00

Henry L. Brown, Ayer, 50 flowering plants	1 50
Edna Chaffin, Ayer, 142 flowering plants	4 25
Una A. Chaffin, Ayer, 12 ferns and 50 leaf sprays	3 50
Austin W. Cheever, Mattapan, 170 flowering plants, 47 grasses, 52 sedges, and 15 ferns	13 00
Dorothea Clapp, Dorchester, 41 lichens	2 70
Dudley Clapp, Dorchester, 97 mosses	5 75
Margaret Cleary, Groton, 12 flowering plants	35
Ruth W. Fisher, Ayer, 98 flowering plants and 30 leaf sprays	4 75
Marion L. French, So. Framingham, 41 flowering plants	1 25
Olive W. French, So. Framingham, 70 flowering plants, 5 sedges, and 72 lichens	7 25
Henry G. Holbrook, Norfolk, 36 flowering plants	1 25
Hazel Irwin, Ayer, 13 ferns and 70 leaf sprays	4 75
Lois A. Leavitt, Ayer, 158 flowering plants, 32 ferns, and 50 leaf sprays	9 75
Gladys Mason, Groton, 169 flowering plants, 14 ferns, and 6 mosses	5 80
Anna R. Mann, Norfolk, 75 flowering plants	2 25
A. Belle Munroe, Groton, 15 flowering plants	45
Mabel Sargent, Ayer, 20 flowering plants	60
Florence Webster, Haverhill, 34 ferns	4 00
Barbara Williams, Newton Highlands, 42 flowering plants	1 25
Alice Woods, Groton, 12 flowering plants	35

NATIVE PLANTS AND FERNS.

May 7.

NATIVE PLANTS.— Collection of 30 bottles of named species and varieties, one bottle of each:

1st, Mrs. Arthur Clark, $6; 2d, Mrs. Abby S. Colburn, $4; 3d, Misses E. A. and M. S. Doran, $3; 4th, Miss Isabelle C. Shattuck, $2; 5th, Cobbet School, $1.

June 4–5.

NATIVE PLANTS.— Collection of 30 bottles of named species and varieties, one bottle of each:

1st, Mrs. Arthur Clark, $6; 2d, Mrs. Abby S. Colburn, $4; 3d, Misses E. A. and M. S. Doran, $3; 4th, Miss Isabelle C. Shattuck, $2; 5th, Miss Katherine Buitta, $1.

June 21–22.

NATIVE PLANTS.— Collection of 40 bottles of named species and varieties, one bottle each:

1st, Mrs. Arthur Clark, $6; 2d, Mrs. Abby S. Colburn, $4; 3d, Misses E. A. and M. S. Doran, $3; 4th, Miss Isabelle C. Shattuck, $2; 5th, Miss R. L. Mann, $1.

July 16.

NATIVE PLANTS.— Collection of 40 bottles of named species and varieties, one bottle each:

1st, Mrs. Arthur Clark, $6; 2d, Misses E. A. and M. S. Doran, $4; 3d, Mrs. A. S. Colburn, $3; 4th, Miss Katherine Buitta, $2.

Gratuity:—

Miss R. L. Mann, Display of native plants not entered for prize, $1.

July 23.

NATIVE FERNS.— Collection of named species and varieties:

1st, Miss Isabelle C. Shattuck, $5; 2d, Mrs. Arthur Clark, $4; 3d, Chester C. Kingman, $3.

Gratuity:—

G. E. Davenport, Display of ferns not entered for prize, $3.

August 6.

NATIVE PLANTS.— Collection of 40 bottles of named species and varieties one bottle of each:

1st, Mrs. Arthur Clark, $6; 2d, Miss Isabelle C. Shattuck, $4; 3d, Misses E. A. and M. S. Doran, $3; 4th, Miss R. L. Mann, $2; 5th, Miss Katherine Buitta, $1.

September 22–25.

NATIVE PLANTS.— Collection of 40 bottles of named species and varieties, one bottle of each:

1st, Misses E. A. and M. S. Doran, $6; 2d, Carl Blomberg, $4; 3d, Mrs. Arthur Clark, $3; 4th, Miss Isabelle C. Shattuck, $2; 5th, Miss Ida J. Henderson, $1.

HENRY SAXTON ADAMS,	Wellesley,	*Committee on School Gardens and Native Plants.*
MISS KATHARINE W. HUSTON,	Roxbury,	
CHARLES W. JENKS,	Bedford,	
W. E. C. RICH,	Roxbury,	
WILLIAM P. RICH,	Chelsea,	
MISS MARY RODMAN,	Concord.	

SCHOOL GARDENS AT FAIRHAVEN MASS.

REPORT OF THE DELEGATE TO THE STATE BOARD OF AGRICULTURE FOR THE YEAR 1904.

The past year has been one of some note to the Board, both from its difficulties and its activities. The Governor in his inaugural address recommended a reorganization of this body and later presented a bill to the Legislature covering his recommendation. The Governor's bill restricted the duties of the Board to such an extent as to make it virtually a useless body. The farmers of the Commonwealth resented this curtailment of their privileges and protested vigorously, both directly and through their friends, as a plan of different tenor had been formulated by the Board, and had later been presented to the Legislature, with an additional one by W. H. Bowker, defining his views on the subject. These bills were fully considered by the committees, public hearings were given extending over several days, and finally all were referred to the next Legislature.

The annual summer meeting of the Board was held at the Massachusetts Agricultural College, Amherst, at which Dr. Henry T. Fernald gave a public field demonstration for preparing and applying the remedy of salt, lime, and sulphur wash for the San José scale, also of the fumigation of trees with hydrocyanic acid gas to destroy the same insect.

Prof. F. A. Waugh gave a demonstration which was particularly interesting explaining the preparation of Bordeaux mixture and the effects produced by spraying with different kinds of nozzles at high and low pressure.

Prof. Wm. P. Brooks exhibited three leading varieties of separators at the dairy school, showing the method of operation and action of each, followed by a demonstration of the Babcock test and the latest model of Farrington's Pasteurizer. The meeting closed with a lecture by Dr. Geo. M. Twitchell of Augusta, Maine, editor of the Maine Farmer. There was a very large

attendance on this occasion from other sections of the State indicating an earnest desire for information on agricultural subjects and for practical methods of overcoming the insidious insect pests.

The usual Crop Reports have been published commencing with the month of May. Special articles have been appended to these reports as follows:

May. The Hay Crop of Massachusetts, by Prof. Wm. P. Brooks, Amherst.

June. The growing of Mushrooms, by Dr. Geo. E. Stone, Amherst.

July. The Gypsy and Brown-tail Moths, by A. H. Kirkland, Boston.

August. Harvesting and Marketing Apples, by Prof. F. A. Waugh, Amherst.

September. Breeds for the Farm, and Farmers as Poultry Breeders, by John H. Robinson, Boston.

October. Bee keeping; how to meet its dangers and difficulties, by Burton W. Gates, Worcester.

All but the October bulletin were illustrated. There have also been issued the following Nature Leaflets:

Leaflet No. 20, Massachusetts Weeds, by Prof. Geo. E. Stone, Amherst.

Leaflet No. 21, Potato Rots, by Prof. Geo. E. Stone, Amherst.

Leaflet No. 22. Hints for Outdoor Bird Study, by Edward Howe Forbush:

No. 1. How to identify birds.
No. 2. How to find birds.
No. 3. How to approach birds.
No. 4. How to attract birds.

These leaflets are in demand for schools.

The public winter meeting of the Board was held at South Framingham, December 6, 7, and 8, and was of unusual interest. The lectures were given by gentlemen eminent in their several specialties and were all of high order. They were as follows:

Producing and Marketing Milk, by Frank B. Allen of Springfield. It covered the whole subject of stock; how to house it,

and how to feed it; how to milk, and how to cool it; how to ship to market, and for just prices.

The Profitable Dairy Cow, by Prof. Charles S. Plumb, Professor of Animal Husbandry, Ohio State University, Columbus, Ohio. This was an exceedingly interesting paper, and given in an original manner.

Methods and procedure in the National House of Congress, by Hon. J. D. Long. This address by one of such large experience formed a very important feature of the session.

The Advisability of Agricultural Education in Elementary Schools, by Prof. L. H. Bailey, Director College of Agriculture, Cornell University, Ithaca, N. Y. It was a paper well worthy of the reputation of its author.

The Present Definition of Fertility, by Dr. W. H. Jordan, Director New York Agricultural Experiment Station,. Geneva, N. Y.

A reception to the Board of Agriculture and others followed which was enlivened by an address from his Excellency, Gov. John L. Bates.

The next morning an address was given on Food Adulterations, by Dr. H. W. Wiley, Chief of Bureau of Chemistry, U. S. Department of Agriculture, Washington, D. C. After the adjournment of the Board many members visited Millwood Farm, Framingham, by invitation of N. I. Bowditch. This is a very large estate of several hundred acres devoted to the production of milk and sustains 180 head of cattle; 100 of them in milking; which product is supplied by contract to hospitals. The estate is conducted under the modern intensive system of culture.

The new Secretary of the Board, J. Lewis Ellsworth is doing excellent work.

WILLIAM H. SPOONER,

Delegate.

December 31, 1904.

REPORT OF THE INSPECTOR TO THE STATE BOARD OF AGRICULTURE FOR THE YEAR 1904.

To the State Board of Agriculture,

GENTLEMEN:—In response to your directions I hereby respectfully report upon the Massachusetts Horticultural Society, which holds so high a position in the horticultural affairs of the country and the world. It is the recipient of the bounty of the Commonwealth and well deserves it; and could very properly be intrusted with any sum of greater degree, and the taxpayers be assured of its being wisely expended on the lines that might be directed.

Many members give their services freely in order that the promotion of horticultural interests shall redound to the prosperity of the State, through increased energy, and broadened markets, among her citizens.

As stated in my report for 1903, the organization of the Society was improved by the unanimous action of its members and has recently been still further perfected, so far as has been possible under the Act of Incorporation granted by the Legislature of 1829. The Society has just now, on November 19th, voted unanimously to petition the general Court of 1905, to so amend the Act of Incorporation that its Treasurer and Secretary may hereafter be named by the Board of Management which the Society elects.

I ask that the Board of Agriculture by its representatives favor such action.

The Society has continued to hold numerous free exhibitions where awards of merit are bestowed; and also exhibitions of more elaborate character at which an admission fee is charged. The expenses of the Society in its charitable work are heavy and the question of receipts is of great importance.

During the winter season ten Saturdays have been devoted to

the delivery of addresses by prominent horticulturists, followed by discussions and enquiries. These events occurred during the months of January, February, and March.

As the horticultural branch of agriculture is every year increasing in breadth and importance throughout the State, so do the many fields for work by this Society increase. She needs and deserves a very considerable increase of her endowment funds.

Let everyone, who is cognizant of the subdivisions of Horticulture, and who knows how worthy a recipient the old Massachusetts Horticultural Society would be, never fail to add a good word in favor of an increase of her endowment funds. I highly commend her work to you.

Respectfully submitted,

FRANCIS H. APPLETON,

Inspector.

REPORT OF THE COMMITTEE ON LECTURES AND PUBLICATION FOR THE YEAR 1904.

BY AARON LOW, CHAIRMAN.

The Committee on Lectures and Publication presents the following summary of its work for the year.

A course of ten lectures was given during the winter as follows:

January 16. The Gypsy Moth and its Ravages. By John K. M. L. Farquhar, Boston.

January 23. Trees, Flowers, and Fruits of the East. By Henry H. Goodell, Amherst.

January 30. Practical Nature Study for the Public Schools. By Mrs. Cora C. Stuart Jones, Roxbury.

February 6. The Arnold Arboretum. By John G. Jack, Jamaica Plain.

February 13. My Experience and Observations in Horticulture. By A. A. Hixon, Worcester.

February 20. Orchids and their Culture. By William N. Craig, North Easton.

February 27. The Study of Parasitic Fungi in the United States. By Dr. G. P. Clinton, New Haven, Conn. This lecture was delivered under the John Lewis Russell Bequest.

March 5. The Protection of Native Plants. By Robert T. Jackson, Cambridge.

March 12. The Gladiolus. By Arthur Cowee, Berlin, N. Y.

April 2. The Peony. By George C. Watson, Philadelphia.

The annual Schedule of Prizes was issued in January and two numbers of the TRANSACTIONS have been published; those for 1903 Part II and 1904 Part I.

AARON LOW,
JAMES H. BOWDITCH,
E. W. WOOD,
ROBERT T. JACKSON,
EDWARD B. WILDER.
} *Committee.*

REPORT OF THE SECRETARY AND LIBRARIAN FOR THE YEAR 1904.

Since most of the details of the work of the Society for the year are fully set forth in the report of the Board of Trustees and in the reports of the various committees, there only remain for the Secretary a few general and statistical observations.

The two meetings of the Society, as provided for in the By-laws, have been duly held: the Inaugural Meeting, January 2, and the Annual Meeting, November 19. The business transacted on these occasions is recorded in its appropriate place in the Transactions.

The publications of the Society for the year and the dates of issue are as follows:

January 23. Schedule of Prizes and Exhibitions, 48 pages

August 5. Transactions, 1903, Part II, pages 159–329 and 20 plates.

December 12. Transactions, 1904, Part I, pages 1–202 and 14 plates.

It is desirable to increase the value of the Transactions by the publication of original papers on horticultural subjects in addition to or in the place of those presented in the regular course of lectures. Such contributions are invited and will be considered by the Committee on Lectures and Publication.

A card index has been made this year of all the horticultural papers, addresses, memorials, and other matters of historical interest that are recorded in the Transactions from the institution of the Society in 1829 until the present time. This has been found already of great value and convenience.

The Library.

Especial attention has been given during the present year to perfecting the library in the matter of horticultural periodicals.

Broken sets of several American and foreign serials have been made complete and others ordered that are not represented on our shelves.

By sales and exchange of duplicate material, additions to the library of the value of $129.67 have been made, practically increasing the library appropriation by this amount.

By the substitution of strong cloth material (art vellum of the bookbinder) in the place of the several kinds of leather formerly used in the binding of periodicals, a reduction of about twenty-five per cent has been made in the cost of binding, thereby enabling a corresponding increase in the number of volumes bound.

Through a special apppropriation of one hundred dollars by the Board of Trustees about fifteen hundred pamphlets have been separately bound in a durable manner. It is a source of gratification to the Librarian to have these pamphlets, many of which are of rarity and value, properly taken care of.

An additional card-catalogue case has been provided and a new book label adopted.

It is a satisfaction also to record the completion of six glazed cases for the better protection of our many valuable illustrated folios. With the addition of two more now in process of construction, through the generosity of a prominent and interested member of the Society, all of these books can now be properly taken care of without disarrangement of our system of classification. With the instalment of these several improvements attention will be given to the completion of the much-needed revision of the card catalogue which still bears the shelf numbers of the old library.

There have been received during the year a number of gifts of books and miscellaneous pamphlets which deserve grateful mention and comment in this report.

February 5 there was received from the Boston Athenæum, Charles Knowles Bolton, Librarian, a large number of reports and pamphlets relating to horticultural and agricultural societies. Among them were 66 nurserymen's and seedsmen's catalogues dating from 1824 to 1860; 208 agricultural reports and pamphlets; a number of the earlier reports and publications of the Massachusetts Horticultural Society; and interesting botanical papers on

various subjects. This gift is of value in enabling us to fill some gaps in sets of publications and will serve to call attention to the fact that this library is the proper place for the disposition of all such material. Even if a good deal is duplicate much of it can be advantageously used in exchange with other institutions.

There was received also from the Cambridge Entomological Society a case of old agricultural papers among which were found several volumes which were very welcome additions to the library.

April 23 Mr. William H. Spooner presented four books not previously contained in our collection.

These gifts suggest the remark that there is in the community much similar material which would be acceptable additions to the library.

WILLIAM P. RICH,
Secretary and Librarian.

REPORT OF THE TREASURER FOR THE YEAR 1904.

MASSACHUSETTS HORTICULTURAL SOCIETY, *in account current with* CHARLES E. RICHARDSON, *December 31st, 1904.*

DR.

To amount paid for Street Lamps charged to Real Estate					$808 50
" " " " Furniture and Exhibition Ware					629 72
" " " " Library, appropriated by Society		$500 00			
" " " from Income of J. S. Farlow Fund		115 72			
" " " " Income of J. D. Williams French Fund		119 72			
					735 44
" " " for 11 Shares General Electric Stock					1,100 00
" " " " Interest on funds for prizes and other funds, credited opposite					2,074 72
" " " " Heating			1,520 62		
" " " " Lighting			884 31		
" " " " Water Rates			57 40		
" " " " Labor			1,899 83		
" " " " Stationery, Printing and Postage			2,200 53		
" " " " Insurance			496 37		
" " " " Incidentals			882 13		
" " " " Repairs			71 35		
" " " " Committee on Lectures and Publications			200 00		
" " " " Committee on Forestry and Roadside Improvement			9 20		
" " " " Salaries of Treasurer, Secretary and Assistants			3,711 67		
" " " " Salaries of Committees			864 48		
" " " " Tax on Real Estate in South Boston			142 88		
Amounts carried forward				$12,940 77	$5,348 38

Amounts brought forward . . .	$12,940 77		$5,348 38
To amount paid for Electric Power . .	68 62		
" " " " Legal Services . . .	100 00		
" " " to A. H. Kirkland . . .	30 00		
" " " " Kenneth Finlayson . .	60 00		
			13,199 39
For *Prizes awarded in 1903*, viz.			
" H. H. Hunnewell, Triennial Prize . .	160 00		
" Prizes for Plants	1,498 48		
" " " Flowers	1,312 89		
" " " Fruit	977 87		
" " " Vegetables	889 17		
" " " Gardens and Greenhouses . .	311 64		
" " " Native Plants	63 05		
" " " School Gardens and Children's Herbariums . . .	94 45		
" H. H. Hunnewell, Prizes for Rhododendrons	105 00		
" Edward Hatch, Special prize . . .	30 00		
" Special prizes Chrysanthemum Show, N. Y., 1903	80 00		
			$5,522 55
			24,070 32
Balance of Cash December 31st, 1904 . .			12,388 80
			$36,459 12

CR.

By Balance of account rendered December 31, 1903 . .			$15,531 02
" Received from Building in 1904, use of Halls,	$1,305 00		
" " " Annual Exhibitions $1,957 25			
Less Expenses, 1,201 15			
	756 10		
" " " Admissions and Assessments	1,036 00		
" " " Mount Auburn Cemetery .	2,760 08		
" " " State Bounty . . .	600 00		
" " " Sale of History . . .	3 00		
" " " " " Transactions . .	2 00		
" " " Bequest of Francis Brown Hayes	1,076 99		
" " " Sale of 29 rights General Electric Stock . .	165 30		
Amounts carried forward	$7,704 47		$15,531 02

Amounts brought forward		$7,704 47	$15,531 02
By Received from Edward Hatch, for Special Prize		30 00	
" " " Gardeners' and Florists' Club, for Special Prize . .		50 00	
" " " M. A. Patten, for Special Prize		10 00	
" " " William Nicholson, for Special Prize . . .		10 00	
" " " Interest on Bonds,	$9,665 00		
" " " " " Stock,	1,134 00		
" " " " " Bank Balances,	249 91		
		11,048 91	
" Interest credited following funds charged opposite:			
Samuel Appleton Fund .	$50 00		
John A. Lowell " .	50 00		
Theodore Lyman " .	550 00		
Josiah Bradlee " .	50 00		
Benjamin V. French " .	25 00		
H. H. Hunnewell " .	200 00		
W. J. Walker " .	117 72		
Levi Whitcomb " .	25 00		
Benjamin B. Davis " .	25 00		
Marshall P. Wilder " .	50 00		
John Lewis Russell " .	50 00		
Francis Brown Hayes " .	500 00		
Henry A. Gane " .	50 00		
John S. Farlow " .	100 00		
J. D. Williams French " .	200 00		
Benjamin H. Pierce " .	32 00		
		2,074 72	
			20,928 10
			$36,459 12

CHARLES E. RICHARDSON,
Treasurer.

Approved:

WALTER HUNNEWELL,
GEORGE F. FABYAN,
ARTHUR F. ESTABROOK,
} *Finance Committee.*

ASSETS, DECEMBER 31st, 1904.

Real Estate	$516,980 86	
Furniture and Exhibition Ware	9,356 91	
Library	42,484 63	
Stereotype Plates and Copies of History	243 50	
Chicago, Burlington & Quincy R. R. Bonds	1,000 00	
Kansas City, Clinton & Springfield R. R. Bonds	1,980 00	
Lake Shore & Michigan Southern, R. R. Bonds	10,415 25	
City of Newton, Bonds	24,228 75	
Atchison, Topeka & Santa Fe R. R. Bonds	44,693 25	
Chicago, Burlington & Quincy, "Nebraska Extension" R. R. Bonds	50,012 50	
Chicago & West Michigan R. R. Bonds	9,987 50	
Kansas City, Fort Scott & Memphis Consols	27,523 75	
Chicago, Burlington & Quincy, "Illinois Division," R. R. Bonds	51,625 00	
Boston & Maine R. R. Bonds	8,710 00	
West End Street Railway Company Bonds	5,162 50	
General Electric Company Stock	11,016 70	
W. A. Hayes and A. P. Loring, Trustees	3,488 76	
Cash	12,388 80	
		$831,298 66

LIABILITIES.

Prize and other Funds invested in bonds and stock:

Samuel Appleton	Fund,	$1,000 00
John A. Lowell	"	1,000 00
Theodore Lyman	"	11,000 00
Josiah Bradlee	"	1,000 00
Benjamin V. French	"	500 00
H. H. Hunnewell	"	4,000 00
W. J. Walker,	"	2,354 43
Levi Whitcomb	"	500 00
Benjamin B. Davis	"	500 00
Marshall P. Wilder	"	1,000 00
John Lewis Russell	"	1,000 00
Francis Brown Hayes	"	10,000 00
Henry A. Gane	"	1,000 00
Amount carried forward		$34,854 43

Amount brought forward	$34,854 43		
John S. Farlow Fund	2,500 05		
J. D. Williams French "	5,144 15		
Benjamin H. Pierce "	800 00		
		$43,298 63	
Prizes awarded in 1904, payable in 1905		6,350 00	
Miss Sarah B. Fay, Special Prize		50 00	
M. A. Patten, " "		10 00	
Gardeners' and Florists' Club, "		50 00	
William Nicholson, " "		10 00	
			49,768 63
Surplus			781,530 03
			$831,298 66

CHARLES E. RICHARDSON,
Treasurer.

MEMBERSHIP OF MASSACHUSETTS HORTICULTURAL SOCIETY, DECEMBER 31st, 1904.

Life Membership per last report	686		
Added in 1904	19		
Commuted from Annual	1		
		706	
Deceased		32	
			674
Annual members per last report	182		
Added in 1904	13		
Reinstated	1		
		196	
Resigned	2		
Commuted to Life	1		
Dropped for non-payment of assessment for two years	10		
Deceased	10		
		23	
			173
Present membership			847

INCOME FROM MEMBERSHIP.

19 New Life Members @ $30	$570
1 Commuted to Life @ $20	20
13 New Annual Members @ $10	130
Assessments	316
	$1,036

CHARLES E. RICHARDSON,
Treasurer.

AUDITOR'S CERTIFICATE.

28 State Street, Boston, March 27th, 1905.

To the Finance Committee of the
Massachusetts Horticultural Society,

Gentlemen: — Having completed my audit of the books and general a counting affairs of the *Massachusetts Horticultural Society* for the ye which ended with the 31st day of December, 1904, I herewith hand you m report of the same.

Report.

I added the ledger, journal and cash book and the small books tributar to the cash book and saw that all balances were correctly carried forwar I examined and checked the vouchers representing the disbursement during the year, and found the amount of cash required by the cash boo upon the first day of January, 1905, to have been on hand; and also in spected the securities of the Society in the custody of the Treasurer, an they were in all instances in accordance with the requirements of th records.

I traced all postings from the journal and cash book into the ledger, an proved the correctness of the balance sheet taken from the ledger as o the 31st day of December, 1904, which is a true statement of the financia condition of the Society upon said date, to the best of my knowledge an belief.

In short, I satisfied myself that the work in connection with the account ing affairs of the Society was being conscientiously and intelligently per formed and that there was every evidence of fidelity upon the part of th Treasurer.

Very respectfully yours,
ANDREW STEWART,
Examiner of Accounts.

Dr. *Massachusetts Horticultural Society in account with the Proprietors of the Cemetery of Mount Auburn.* **Cr.**

For Sales and Improvements within the Cemetery for the year ending December 31st, 1904.

To cost of filling up and improving land at Mount Auburn for the year ending December 31st, 1904. The Massachusetts Horticultural Society being charged with their proportion of same:				By Sales in January	$ 432 00
Magnolia Avenue.				" " " February	10 00
39.4 days, man	$ 88 65			" " " March	20 00
86.6 days, man and horse	324 76			" " " April	675 00
6.9 days, man and two horses	36 23			" " " May	2,790 00
		$449 64		" " " June	1,093 00
Pearl Avenue.				" " " July	2,028 20
18.1 days, man	$ 40 73			" " " August	270 00
3.6 days, man and horse	13 50			" " " September	645 00
		$ 54 23		" " " October	2,521 00
		$503 87		" " " November	292 00
One-fourth of $503.87 is			$ 125 97	" " " December	800 00
Balance due Mass. Horticultural Society			2,760 08		$11,576 20
			$2,886 05	Net amount received from Receiving Tomb	1,393 00
					$12,969 20
				Less graves repurchased	25 00
					$12,944 20
				Deduct for Annual Expense	1,400 00
					$11,544 20
				One-fourth of $11,544.20 is $2,886.05	$2,886 05

E. and O. E.

BOSTON, December 31st, 1904.

JOHN L. DILL, *Treasurer.*

THE MASSACHUSETTS HORTICULTURAL SOCIETY

To the PROPRIETORS OF THE CEMETERY OF MOUNT AUBURN.

To cost of filling up and improving land at Mount Auburn for the ending December 31st, 1904. The Massachusetts Horticultural So being charged with its proportion of same.

Magnolia Avenue.

39.4 days, man	$ 88 65	
86.6 days, man and horse	324 76	
6.9 days, man and two horses	36 23	
		$449 64

Pearl Avenue.

18.1 days, man	40 73	
3.6 days, man and horse	13 50	
		54 23
		$503 87
One-fourth of $503.87 is		$12

JAMES C. SCORGIE,
Supt. of the Cemetery of Mount Auburn

MOUNT AUBURN, December 31st, 1904

I certify the foregoing to be a true copy of improvements for the y 1904, rendered by the Superintendent.

JOHN L. DILL,
Treasurer

THE ANNUAL MEETING, NOVEMBER 19, 1904.

ANNUAL MEETING FOR THE YEAR 1904.

The Annual Meeting of the Massachusetts Horticultural Society for the year 1904 was held at Horticultural Hall, Boston, on Saturday, November 19, at twelve o'clock, noon.

The meeting was called in accordance with the By-laws for the election of officers for the ensuing year and for the transaction of other business, and a printed notice had been mailed to the address of every member of the Society as it appeared upon the records of the Secretary.

President Walcott presided and there were about fifty members present.

The record of the Annual Meeting, November 14, 1903, was read and approved.

Benjamin C. Clark reported on behalf of the committee appointed to procure a portrait of Ex-President Hadwen that the portrait had been obtained and hung in the hall of the Society. He asked that the report be accepted and the committee discharged, and it was so voted.

The President presented a recommendation from the Board of Trustees that the sum of $6506.00 be appropriated for prizes and gratuities for the ensuing year. The recommendation was unanimously adopted.

The President also presented a recommendation from the Board of Trustees that the Charter of the Society be changed so that the Treasurer and Secretary shall be appointed by the Board of Trustees instead of being elected by the Society as at present required. On motion of Mr. Clark the recommendation was unanimously adopted.

The President appointed Edward B. Wilder, J. Allen Crosby, and Patrick Norton a committee to receive, assort, and count the votes given and to report the number.

The polls were declared open at twelve o'clock, noon, and the ballots were prepared in accordance with the Australian system. On motion of Mr. Clark a recess until four o'clock was voted.

At four o'clock the President declared the polls closed and the ballot committee proceeded to assort and count the votes. At forty minutes past four Mr. Wilder, the chairman, reported the result of the ballot and the President announced the following named persons to be the duly elected officers of the Society for the year 1905:

President,	ARTHUR F. ESTABROOK.
Vice-President, (for two years),	ROBERT T. JACKSON.
Treasurer,	CHARLES E. RICHARDSON.
Secretary,	WILLIAM P. RICH.
Trustee, (for two years),	ARTHUR D. HILL.
Trustees, (for three years),	GEORGE F. FABYAN.
	WARREN FENNO.
	J. WOODWARD MANNING.
	JOHN A. PETTIGREW.
Nominating Committee,	OBADIAH B. HADWEN.
	HENRY S. HUNNEWELL.
	JOHN LAWRENCE.
	HENRY P. WALCOTT.
	JAMES WHEELER.

The following amendment to the By-laws was also declared adopted:

Proposed amendment to Section XIV of the By-laws.

Section XIV (Art. 1) to be amended by striking out the sentence which reads, "Said Committee shall nominate at least twice the number of candidates required to fill each office of the Society," and by substituting for the word "such," in the fifth line, the word "its," so that it shall read as follows:

A Nominating Committee of five members shall be elected by the Society at its annual meeting. Said Committee shall file its nominations with the Secretary at least one month before the annual meeting. The Secretary shall, immediately on receiving such nominations, post the same in some public place in the Society's building.

Adjourned.

WILLIAM P. RICH,
Secretary.

NECROLOGY, 1904.

NECROLOGY, 1904.

JOSIAH HOOPES, a corrresponding member of the Society since 1875, died at West Chester, Pennsylvania, January 16, 1904. He was born November 9, 1832, in the same city in which he died, and from his earliest years was interested in the study of all that pertained to plant life. This interest finally developed into the establishment of a nursery business with 600 acres of land devoted to the cultivation and improvement of trees, shrubs, and flowering plants.

He made a special study of the Coniferæ suited to the climate of this country and embodied the results of his experience and observations in his "Book of Evergreens," published in 1868.

He combined in a marked degree with scholarly attainments the business ability necessary for the successful carrying on of a mercantile career.

Mr. Hoopes was a member of the Society of Friends.

HON. STARKES WHITON was born in Hingham, Massachusetts, April 11, 1829, and died there February 12, 1904. He became a member of the Massachusetts Horticultural Society in 1880.

Mr. Whiton was a life-long resident of Hingham and was prominent in the affairs of his town and also of his state. He was the treasurer of the Hingham Agricultural and Horticultural Society for many years and always a contributor to its exhibitions.

He was deeply interested in horticulture and enjoyed his asssociation with the Massachusetts Horticultural Society, but his strenuous business life allowed him little time to indulge his tastes in that direction. He found opportunity, however, to exhibit occasionally the products of his garden at the exhibitions of the Society and was always proud of the award cards which he received.

MISS MARY SOPHIA WALKER of Waltham died February 14, 1904. She became a life member of the Society in 1891. She

was in past years a frequent exhibitor at the exhibitions of the Society and was especially interested in the culture of roses and chrysanthemums.

WILLIAM H. HALLIDAY was born in Grandville, Nova Scotia, December 7, 1834, and died in South Boston, Massachusetts, February 25, 1904.

He became a life member of the Society in 1867 and was active in its work for many years, serving on the Committee of Arrangements almost continuously from 1869 to 1884 and a member of the Committee on Flowers from 1870 to 1877.

He was especially interested for a number of years in the cultivation of plants in Wardian and fern cases, making frequent exhibits of these at the exhibitions of the Society from 1868 to 1875. He presented also several papers on the subject which were printed in the Transactions of the Society.

He was engaged for the greater part of his life in the book-publishing business and was particularly interested in the old and historic buildings in New England and also in the portraits of its eminent men and women. He was interested in horticulture and a great lover of everything artistic.

RICHARD C. MANNING died in Salem, Massachusetts, March 2, 1904. He was admitted a member of the Society in 1902.

Mr. Manning was born in Salem, January 30, 1830. His father was Robert Manning, well known in horticultural circles for his famous pomological garden and nursery which he established in Salem about the year 1823. After his father's death, in 1842, he and his brother Robert continued the garden for a number of years when it seemed best for Richard to take up some other business.

He always retained his interest in horticulture and in the Horticultural Society, often attending the exhibitions. He was interested in books on horticulture and landscape gardening as well as in general literature.

He lived at the old home on Dearborn Street until his marriage in 1865, and all his life he was strongly attached to the garden there, remembering the old trees and plants about the place and watching their growth year by year, looking for the earliest flowers

in spring, and interested in the succession of fruits and flowers through the summer and autumn. Many of the ornamental trees in the garden were placed there by him. He was a devoted lover of nature in all its forms.

He was prominently connected with many of the charitable, scientific, and business institutions of his native city.

By Miss Rebecca B. Manning.

George H. Braman was born in Boston, May 5, 1829, and died in Newton, March 2, 1904. He became a member of the Society in 1897.

Mr. Braman was a well-known business man of Boston in the dry goods line, retiring in 1898 after an active service of 52 years.

Robert Decourcey Ireland, who died at Winthrop, Massachusetts, March 18, 1904, was admitted a member of the Society in 1896.

Mr. Ireland was born in Dimmanway, Ireland, November 17, 1833. He belonged to an English family. He was greatly interested in flower culture and his garden at Winthrop was one of the attractions of the town.

Hon. Samuel Hoar was born in Concord, Massachusetts, September 27, 1845, and died there April 11, 1904. He became a life member of this Society in 1885.

John C. Chaffin of Newton, who died April 12, 1904, was a member of the Society since 1855. He was born at Princeton, Massachusetts, April 17, 1823.

Mr. Chaffin's special horticultural interest was in roses of which he was a great lover and an enthusiastic grower. Probably his greatest pleasure was centered in his rose garden in which he had, it is said, a thousand plants of the choicest varieties of Hybrid Perpetuals, and received annually from the best growers in Europe the most desirable new roses as they were introduced.

He was for many years a constant exhibitor at the rose exhibitions of the Society receiving the hightest awards for his displays. At the exhibition held June 30, 1868, he showed forty varieties of Hardy Perpetual roses.

His work will be continued through a bequest to the Society of one thousand dollars the income of which is to be awarded annually in prizes for Hardy Perpetual roses of unusual merit.

Mr. Chaffin was a successful merchant in Boston and was highly esteemed by all who knew him.

HERMAN STRATER died at his home in Roxbury, Massachusetts, April 20, 1904, at the age of 68 years. He became a member of the Society in 1892.

FREDERICK WARREN GODDARD MAY was born in Boston, December 4, 1821, and died in Dorchester, May 28, 1904. He became a member of the Society in 1865.

Throughout his life Mr. May had a keen interest in all horticultural and agricultural matters and on his estate at Dorchester he put into practice many of his ideas relating to agricultural economy. He was always interested in any new facts concerning the cultivation of flowers, fruits, and vegetables.

LUCIUS H. FOSTER, died in Dorchester, Massachusetts, May 31, 1904, at the age of 57 years. He became a member of the Society in 1903.

Mr. Foster was a prominent commercial horticulturist and a frequent contributor to the Society's exhibitions. He introduced to the New England trade several specialties in roses, carnations, and ferns; among them his fern "Anna Foster," a unique sport from the Boston fern, was, perhaps, the most widely known.

HON. ELISHA SLADE CONVERSE was born in Needham, Massachusetts, July 28, 1820, and died in Malden, June 5, 1904. He became a life member of the Society in 1868.

For many years the extensive displays of flowering and foliage plants from the greenhouses and gardens of Mr. Converse have been marked features of the exhibitions of the Society. From his estate emanated plants of the chrysanthemum, especially, which were carried to a height of magnificence, in color, form, and profusion of bloom never before equaled in all the history of the Society.

He was a man of many interests, actively engaged in commercial enterprises, generous in philanthropic work, and a public-spirited citizen in the affairs of his city and his state.

WARREN D. HINDS died at Townsend, Masssachusetts, June 21, 1904, in the 61st year of his age. He became a member of the Society in 1899.

He was a successful fruit grower. His orchards at Townsend in the northern part of the state were situated upon high land well adapted for the culture of the apple, peach, and plum, and he secured large and remunerative crops by judicious management and careful attention to improve methods of cultivation.

In 1897 and 1898 he was awarded the Society's prizes for the best peach orchard in the state, and for his orchards of apples and plums. He received also numerous awards at the regular exhibitions for his displays of various fruits.

THOMAS HARRISON of Melrose Highlands, Massachusetts, died June 21, 1904. He became a member of the Society in 1896.

Mr. Harrison was much interested in the work of the Society and was a regular attendant at its meetings and at the winter lectures, taking an active part in the discussions on horticultural and agricultural subjects.

EDWARD BUTLER, a member of the Society since 1873, died in Boston, June 25, 1904, at the age of 51 years. Mr. Butler was born at Pool Harbor, England, and came to this country in 1871 where he secured employment as a gardener to the Hon. William Claflin. He afterward entered the employ of Henry F. Durant, and when this estate became the seat of Wellesley College Mr. Butler remained in charge of the grounds until his death.

For many years he was a constant contributor to the exhibitions of the Society and his name frequently appears on its records as the recipient of honors bestowed in recognition of his skill as a gardener and plant grower.

AMERICAN FLORIST, JULY 16, 1904.

JAMES F. HARLOW of Quincy, Massachusetts, died at Asheville, North Carolina, June 26, 1904.

He was born in Boston in 1866 and became a member of the Society in 1898.

Mr. Harlow was a graduate of Harvard in the class of 1888, studied law, and was admitted to the Suffolk Bar in 1891.

JOSEPH H. WOODFORD, a member of the Society since 1865, died at his summer home in Wenham, Massachusetts, July 16, 1904, at the age of 76 years.

Colonel Woodford, as he was familiarly called, was one of the most prominent and active members of the Society in recent years. A man of much executive force and ability, thoroughly qualified by practical experience, and interested in horticultural matters, he devoted much time in his later life to the furtherance of the work of the Society.

He was a member of the Committee of Arrangements for many years, the last twelve as chairman, and had served also at various times as chairman or member of the committees on plants, flowers, vegetables, and gardens.

In his earlier life he was connected with the East India trade, residing in India for several years, and afterward visited Central and South America, always interested in the floras of the countries he visited and bringing home specimens of living plants.

He presented papers before the Society in 1882 and 1885 on Herbaceous Plants and their Culture and on Heating Greenhouses, and in 1886 gave an account of A Trip to the Tropics, all of which were printed in the Transactions of the Society for those years.

OLIVER J. RAND was born in Exeter, New Hampshire, April 3, 1820, and died in Cambridge, Massachusetts, July 28, 1904. He became a member of the Society in 1865.

REV. SAMUEL REYNOLDS HOLE, a corresponding member of the Society since 1875, died at Rochester, England, August 27, 1904, in his 85th year.

Dean Hole was born in Caunton, Nottinghamshire, England, December 5, 1819.

He was a devoted and skilful cultivator of the rose and his enthusiasm in its behalf did much to restore a somewhat declining

popular interest in this queen of flowers. He published in 1859 "A Book About Roses" which was so well received that it passed through many editions and was translated into many other languages. The opening sentence of this book expresses a sentiment which finds appreciative response in the hearts of all lovers of floriculture:

> "He who would have beautiful Roses in his garden
> must have beautiful Roses in his heart."

He wrote other books on horticultural subjects in addition to his book on roses, and was one of the founders of the National Rose Society.

NATHAN MATTHEWS, Senior, a member of the Society since 1863, died at Bar Harbor, Maine, August 29, 1904, in the 90th year of his age.

Mr. Matthews was born in Yarmouth, Massachusetts, September 15, 1814. He came to Boston at the age of 15 and engaged in mercantile pursuits, later becoming largely instrumental in the development of real estate interests in Boston and vicinity.

JAMES M. BARNARD, a life member of the Society since 1859, died at Milton, Massachusetts, September 10, 1904, at the age of 86 years.

PHILIP W. MOEN of Worcester, Massachusetts, died at his summer home in Shrewsbury, September 12, 1904, at the age of 47 years.

Mr. Moen was elected a member of the Society June 24, 1904.

Prominently identified with large business affairs he was interested also in agricultural and horticultural matters, and from his magnificent estate at Shrewsbury he sent frequent contributions of plants and flowers to the exhibitions of the Society.

HON. JOSEPH S. POTTER, formerly of Arlington, Massachusetts, died at his residence in Washington, D. C., September 13, 1904, at the age of 82 years. He was elected a member of the Society in 1865. Mr. Potter was a member of the Massachusetts Legislature for fifteen years, and afterward United States Consul to Germany, at Stuttgart.

Jacob Warren Manning died at his home in Reading, Massachusetts, September 16, 1904, at the age of 78 years.

He was a life member of the Society since 1858 and was one of the oldest and best-known horticulturists and nurserymen in the country.

He was born in Bedford, New Hampshire, February 20, 1826. Leaving the home farm at the age of 21 years he spent the next seven or eight years in farm and nursery work on various estates, and, in 1849, became superintendent of the Winnisimmet Nursery at Chelsea, Massachusetts, of which S. W. Cole, the author of The American Fruit Book, was proprietor.

In June, 1854, he settled in Reading and established the nursery business there which he continued uninterruptedly until his death, a period of fifty years. He was especially interested in evergreens and introduced into cultivation in the East many varieties of these, in addition to other ornamental trees and shrubs. He was a pioneer also in the introduction of many desirable fruits, and was among the first to propagate the Concord and Diana grapes.

He was active in the work of the Society, a regular attendant at its meetings, and a constant contributor to its exhibitions. By his death is taken away another of the few remaining veterans of fifty years' service in horticultural endeavor and the vacancy will be hard to fill.

Mr. Manning was a man of interesting personality, full of zeal in his life's work, and ever ready to impart to the inquirer the information sought. It is a source of congratulation that so much of his great store of horticultural knowledge is permanently preserved in the printed Transactions of the Society, for few were the discussions in past years to which he did not add material from his wide knowledge and practical experience.

Edward Kakas, a life member of the Society since 1866, died at his home in West Medford, Massachusetts, September 18, 1904, at the age of 76 years. He was born in Buda-Pesth, Hungary, in 1828. He learned the furrier's trade in his youth and, coming to America about the year 1851, established a fur business in Boston, becoming a leading merchant in that line of trade.

EDWIN W. GILMORE was born in Easton, Massachusetts, October 9, 1828. He learned the machinist's business in Taunton, and in 1854 with the late Oakes and Oliver Ames formed the partnership of E. W. Gilmore & Co., of North Easton, and began the manufacture of various articles of hardware.

Mr. Gilmore was a practical and ingenious machinist, and from time to time invented and introduced important improvements in the way of machinery and labor-saving processes.

He was also much interested in horticulture, and in the year 1872 built the first greenhouse in the town of Easton. He became a life member of the Massachusetts Horticultural Society in 1885, and for a number of years was a frequent and successful exhibitor at its exhibitions, taking numerous medals, certificates of merit, and other premiums. He was especially interested in orchids and his collection of these plants was at one time among the finest in Massachusetts. In the culture of some of the more difficult species such as Odontoglossums, *Miltonia vexillaria*, and Masdevallias he was particularly successful. He had also a fine assortment of Cypripediums, Cattleyas, and other varieties. In addition to orchids he was a successful grower of azaleas, cinerarias, and other stove and greenhouse plants.

He had been accustomed to pass the winters in California in late years, and he secured a collection of oranges and lemons which he cultivated successfully in pots in one of his houses. He grew plants because he loved them, and much of his spare time for years was spent in working amongst them, giving him a pleasant relaxation from a busy life.

Mr. Gilmore died on his birthday, October 9, 1904, aged 76 years.

BY WM. N. CRAIG.

ARTHUR HUNNEWELL died at his home in Wellesley, Massachusetts, October 17, 1904. He became a life member of the Society in 1883.

Mr. Hunnewell was born in Boston, December 1, 1845, and was graduated from Harvard in the class of 1868. He was engaged in the banking business with his father, the late H. Hollis Hunnewell, until 1875, when he retired. He was for several years a

frequent and successful exhibitor at the chrysanthemum exhibitions of the Society.

Ogden Codman, a life member of the Society since 1866, died at South Lincoln, Massachusetts, October 25, 1904, at the age of 65 years.

Elisha Nye Pierce was born in West Medford, Massachusetts, August 21, 1839, and died at his home in Waltham, October 30, 1904, at the age of 65 years. He became a member of the Society in 1900.

Mr. Pierce was a prominent horticulturist, making a specialty in recent years of growing Easter lilies, carnations, and chrysanthemums for the Boston market. He was one of the most genial and companionable of men and a public-spirited citizen. He was a veteran of the Civil War and participated in the first battle of Bull Run where he was wounded.

Samuel A. Carlton, formerly of Somerville, Massachusetts died at his home in Boston, November 10, 1904. He was elected a member of the Society in 1865.

Mr. Carlton was born in Salem, Massachusetts, November 2, 1827. He was a man of large business and financial interests and a member of the firm of Byam & Carlton, the well-known manufacturers of friction matches.

James Gray of Needham, Massachusetts, died November 20, 1904. He was elected a member of the Society in 1860.

Professor Joseph Lancaster Budd, a corresponding member of the Society since 1887, died at Phœnix, Arizona, November 20, 1904. He was born at Peekskill, New York, July 5, 1835.

The scene of Professor Budd's life work was in the Western States where he did much for the interests of horticulture. He was active in the introduction of varieties of fruits suitable for the climate of that section of the country, and by his investigations greatly increased the possibilities of successful orcharding.

Sylvester Tower was born in Oxford County, Maine, April 14, 1833, and died in Boston, December 6, 1904. He was elected a member of the Society in 1901.

Mr. Tower began in 1853 the manufacture of ivory piano keys, building up an extensive and successful business.

ALFRED S. BROWN, a life member of the Society since 1864, died at Jamaica Plain, Massachusetts, December 15, 1904, at the age of 82 years. He was born in Pownal, Maine, January 1, 1822.

Mr. Brown was well known in the mercantile circles of Boston, and was engaged in the wholesale fruit business for a period of fifty years.

OFFICERS, COMMITTEES, AND MEMBERS, 1904.

Massachusetts Horticultural Society.

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*Communications to the Secretary, on the business of the Society, should be addressed to him at Horticultural Hall, Boston.

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MEMBERS OF THE MASSACHUSETTS HORTICULTURAL SOCIETY, 1904.

HONORARY MEMBERS.

Members and correspondents of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following lists are inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

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Major L. A. Huguet-Latour, M. P., Montreal, Canada.
Sir Trevor Lawrence, President of the Royal Horticultural Society, London.
Joseph Maxwell, Rio Janeiro, Brazil.
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Baron R. Von Osten Sacken, Heidelberg, Germany.
Samuel B. Parsons, Flushing, N. Y.
Dr. Henry S. Pritchett, President of the Massachusetts Institute of Technology, Boston.
George W. Smith, Boston.
Albert Viger, President of the National Society of Horticulture of France, Paris.
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GEORGE L. GOODALE, M.D., Professor of Botany, Harvard University, Cambridge.

HENRY H. GOODELL, President of the Massachusetts Agricultural College, Amherst.

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Ames, Oakes, North Easton.
Ames, Oliver, North Easton.
Ames, Mrs. Oliver, Sr., North Easton.
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Andros, Milton, San Francisco, Cal.
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Blake, Francis, Weston.
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Bowditch, James H., Brookline.
Bowditch, Nathaniel I., Framingham.
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Brooks, Shepherd, Boston.
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Brown, Samuel N., Boston.
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Butler, Edward K., Jamaica Plain.

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Cabot, George E., Boston.
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Campbell, Francis, Cambridge.
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Clapp, William C., South Boston.
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Clark, B. Preston, Cohasset.
Clark, Miss Eleanor J., Pomfret Centre, Conn.
Clark, J. Warren, Millis.
Clarke, Miss Cora H., Boston.
Clarke, Eliot C., Boston.
Clough, Micajah Pratt, Lynn.
Cobb, John C., Milton.
Coburn, Isaac E., Everett.
Codman, James M., Brookline.
Coe, Miss Mary Alma, Boston.
Coffin, Abraham B., Winchester.

Cogswell, Edward R., Jr., Cambridge.
Cole, Edward E., Boston.
Collamore, Miss Helen, Boston.
Colton, Samuel H., Worcester.
Comley, Norris F., Lexington.
Converse, Col. H. E., Malden.
Coolidge, Harold J., Boston.
Coolidge, Joshua, Mount Auburn.
Coolidge, J. Randolph, Chestnut Hill.
Coolidge, Mrs. J. Randolph, Chestnut Hill.
Coolidge, T. Jefferson, Jr., Boston.
Cottle, Henry C., Boston.
Cox, Thomas A., Dorchester.
Coy, Samuel I., Boston.
Craig, William Nicol, North Easton.
Crane, Zenas, Dalton.
Crawford, Dr. Sarah M., Roxbury.
Crocker, Hon. George G., Boston.
Crocker, Miss S. H., Boston.
Crosby, George E., West Medford.
Cross, Alfred Richard, Nantasket.
Crowell, Randall H., Watertown.
Curtis, Charles F., Jamaica Plain.
Curtis, Charles P., Swampscott.
Curtis, Charles P., Jr., Boston.
Cushing, Livingston, Weston.
Cushing, Robert M., Boston.
Cutler, Judge Samuel R., Revere.
Cutting, Gen. Walter, Pittsfield.

Daggett, Henry C., Boston.
Dalton, Charles H., Beverly.
Daly, John C., Roxbury.
Damon, Frederick W., Arlington.
Dana, Charles B., Wellesley.
Daniels, Dr. Edwin A., Boston.
Davenport, Albert M., Watertown.
Davenport, George E., Medford.
Davis, Arthur E., Wellesley.
Davis, Mrs. Arthur E., Wellesley.
Davis, Edward L., Worcester.
Davis, L. Shannon, Brookline.
Dawson, Jackson T., Jamaica Plain.
Dee, Thomas W., Cambridge.
Denny, Clarence H., Boston.
Denton, Eben, Dorchester.
Dexter, George, Beverly.
Dexter, Gordon, Beverly Farms.
Dexter, Philip, Beverly.
Dike, Charles C., Stoneham.
Doane, Edgar Howard, Wenham.
Doliber, Thomas, Brookline.
Donald, William, Cold Spring Harbor, N. Y.
Donaldson, James, Roxbury.
Dorr, George, Dorchester.
Dove, George W. W., Andover.
Dowse, William B. H., West Newton.
Draper, Hon. Eben S., Hopedale.
Draper, George A., Hopedale.
Dreer, William F., Philadelphia. Pa.
Dumaresq, Herbert, Chestnut Hill.
Duncan, James L., New York. N. Y.
Dunlap, James H., Nashua N. H.
Durfee, George B., Fall River.
Dutcher, Frank J., Hopedale.
Dwight, Theodore F., Kendal Green.
Dyer, Herbert H., Cambridge.

Eaton, Horace, Cambridge.
Edgar, William W., Waverley.
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Elliot, Mrs. John W., Boston.
Elliott, William H., Brighton.
Ellsworth, J. Lewis, Worcester.

Endicott, William, Boston.
Endicott, William, Jr., Boston.
Endicott, William C., Jr., Danvers.
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Ewell, Warren, Dorchester.

Fabyan, George F., Brookline.
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Falconer, William, Pittsburg, Pa.
Farlow, Lewis H., Cambridge.
Farnsworth, Mrs. William, Dedham.
Farquhar, James F. M., Roslindale.
Farquhar, John K. M. L., Roxbury.
Farquhar, Robert, North Cambridge.
Faxon, John, Quincy.
Fay, H. H., Woods Hole.
Fay, Joseph S., Jr., Woods Hole.
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Fessenden, George B., Allston.
Fewkes, Arthur H., Newton Highlands.
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Fisher, Peter, Ellis.
Fletcher, George V., Belmont.
Fletcher, J. Henry, Belmont.
Fletcher, John W., Chelsea.
Foster, Charles H. W., Brookline.
Foster, Francis C., Cambridge.
Fottler, John, Jr., Dorchester.
Fowle, George W., Jamaica Plain.
French, Miss Caroline L. W., Boston.
French, S. Waldo, Jamaica Plain.
French, W. Clifford, Newton.
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Frost, Harold L., Arlington.
Frost, Irving B., Belmont.
Frost, Varnum, Arlington.

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Gardner, George A., Boston.
Gardner, George P., Boston.
Gardner, John L., Boston.
Gardner, Mrs. John L., Brookline.
Gardner, William Amory, Groton.
Garratt, Allan V., Ashland.
Gaston, William A., Boston.
Gibbs, Wolcott, M. D., Newport, R. I.
Gill, George B., Medford.
Gillard, William, Dorchester.
Gilson, F. Howard, Wellesley Hills.
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Goodale, Dr. Joseph L., Boston.
Goodell, L. W., Dwight.
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Gray, Mrs. John C., Boston.
Gregory, Hon. James J. H., Marblehead.
Grew, Edward S., Boston.

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Hall, George A., Chelsea.
Hall, Jackson E., Cambridge.
Hall, Osborn B., Malden.
Hall, William F., Brookline.
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Harding, Louis B., Chestnut Hill.
Hardy, F. D., Cambridgeport.
Hargraves, William J., Jamaica Plain.

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Harris, Thaddeus William, A. M., Keene, N. H.
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Hatch, Edward, Boston.
Haven, Franklin, Boston.
Hawken, Mrs. Thomas, Rockland, Me.
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Hemenway, Mrs. Augustus, Canton.
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Henshaw, Samuel, Cambridge.
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Hollingsworth, Z. T., Boston.
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Holt, Mrs. Stephen A., Cambridge.
Holt, William W., Winchester.
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Hooper, William, Manchester.
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Horsford, Miss Kate, Cambridge.
Hosmer, Oscar, Wenham.
Hovey, Charles H., South Pasadena, Cal.
Hovey, Stillman S., Woburn.
Howard, Henry M., West Newton.
Howard, Joseph W., Somerville.
Hubbard, Charles Wells, Weston.
Hubbard, James C., Everett.
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Hunnewell, Walter, Wellesley.
Hunt, Dudley F., Reading.
Hunt, Francis W., Melrose.
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Hunt, William H., Concord.
Hutchins, Rev. Charles Lewis, Concord.

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Jackson, Robert T., Cambridge.
James, Ellerton, Nahant.
James, Mrs. Ellerton, Nahant.
James, George Abbot, Nahant.
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Johnson, J. Frank, Malden.
Jones, Jerome, Brookline.
Jones, Dr. Mary E., Boston.
Jordan, Eben D., Boston.
Jordan, Henry G., Brookline.
Jose, Edwin H., Cambridgeport.

Kellen, William V., Marion.
Kelley, George B., Jamaica Plain.

Kendall, D. S., Woodstock, Ont.
Kendall, Edward, Cambridgeport.
Kendall, Joseph R., San Francisco, Cal.
Kendall, Dr. Walter G., Atlantic.
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Kent, John, Chestnut Hill.
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Kingman, C. D., Middleborough.
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Knapp, Walter H., Newtonville.

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Lawrence, Amos A., Boston.
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Lawrence, John, Groton.
Lawrence, Samuel C., Medford.
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Lee, Francis H., Salem.
Lee, George C., Newton.
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Leighton, George B., Monadnock, N. H.
Lemme, Frederick, Charlestown.
Leuchars, Robert B., Dorchester.
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Lincoln, George, Hingham.
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Little, John Mason, Swampscott.
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Loftus, John P., Dorchester.
Loomis, Elihu G., Bedford.
Loring, Augustus P., Beverly.
Loring, Mrs. William Caleb, Beverly.
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Lowell, James A., Chestnut Hill.
Lowell, John, Newton.
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Lumb, William, Boston.
Lunt, William W., Hingham.
Lyman, George H., Wareham.
Lyman, Mrs. Theodore, Brookline.

Mabbett, George, Plymouth.
McCarty, Timothy, Providence, R. I.
Mackie, George, M. D., Attleboro.
McWilliam, George, Whitinsville.
Mahoney, John, Boston.
Mallett, E. B., Jr., Freeport, Me.
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Manning, Mrs. Lydia B., Reading.
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Melvin, James C., West Newton.
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Merriam, Herbert, Weston.
Metivier, James, Cambridge.
Milmore, Mrs. Joseph, Washington, D. C.
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Monteith, David, Dedham.
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Morse, John T., Jr., Boston.
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Moseley, Charles H., Roxbury.
Motley, E. Preble, Boston.
Mudge, George A., Portsmouth, N. H.
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Murray, Peter, Fairhaven.
Mutch, John, Newtonville.

Nevins, Mrs. David, Methuen.
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Newton, Rev. William W., Pittsfield.
Nickerson, Mrs. George A., Dedham.
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Norton, Edward E., Boston.

Oakman, Hiram A., North Marshfield.
Olmstead, Frederick Law, Jr., Brookline.
Olmstead, John C., Brookline.
Orpet, Edward O., South Lancaster.

Page, Mrs. Henrietta, Boston.
Paige, Clifton H., Mattapan.
Parker, Charles W., Boston.
Parkman, Henry, Boston.
Parsons, John E., Lenox.
Patten, Marcellus A., Tewksbury.
Paul, Alfred W., Dighton.
Peabody, Francis H., Boston.
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Peabody, John E., Salem.
Peabody, S. Endicott, Salem.
Peck, William G., Arlington.
Perry, Oliver Hazard, Lowell.
Pierce, Miss Marion W., Topsfield.
Perry, George W., Malden.
Pfaff, Col. Charles, South Framingham.
Phillips, John C., North Beverly.
Phillips, Mrs. John C., North Beverly.
Phillips, William, North Beverly.
Pickman, Dudley L., Boston.
Pickman, Mrs. Ellen R., Boston.
Pierce, Dean, Brookline.
Pierce, George Francis, Neponset.
Pond, Preston, Winchester.
Pope, Col. Albert A., Cohasset.
Porter, Alexander S., Boston.
Porter, James C., Wollaston.
Prang, Louis, Boston.
Pratt, Laban, Dorchester.
Pratt, Lucius G., West Newton.
Pratt, Robert M., Boston.
Prendergast, J. M., Boston.
Prescott, Eben C., New York, N. Y.

Presson, Alfred, Gloucester.
Preston, Howard Willis, Providence, R. I.
Pringle, Cyrus G., Charlotte, Vt.
Proctor, T. E., Boston.
Putnam, George, Manchester.
Putnam, George J., Brookline.
Putnam, Joshua H., Newton Centre.

Quinby, Hosea M., M. D., Worcester.

Raddin, Everett W., North Cambridge.
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Rawson, Herbert W., Arlington.
Rawson, Warren W., Arlington.
Ray, James F., Franklin.
Raymond, Walter, Boston.
Read, Charles A., Manchester.
Reardon, Edmund, Cambridgeport.
Reardon, John B., Boston.
Reed, Henry R., Jamaica Plain.
Rice, George C., Worcester.
Rich, William P., Chelsea.
Richards, John J., Brookline.
Richardson, Charles E., Brookline.
Richardson, Dr. William L., Boston.
Rinn, J. Ph., Boston.
Ripley, Charles, Dorchester.
Ripley, Ebed L., Hingham Centre.
Robb, Russell, Concord.
Robinson, John, Salem.
Robinson, Joseph B., Dorchester.
Rodman, Miss Mary, Concord.
Roffe, Albert H., Newton Centre.
Rogers, H. H., Fairhaven.
Rogers, Mrs. Jacob C., Peabody.
Roland, Thomas, Nahant.
Rothwell, James E., Brookline.
Roy, David Frank, Malden.
Ruddick, William H., M. D., South Boston.
Russell, George, Woburn.
Russell, James S., Milton.
Russell, Walter, Arlington.

Salisbury, William C. G., Brookline.
Saltonstall, Richard M., Chestnut Hill.
Sanford, Oliver S., Roxbury.
Sanger, Mrs. George P., Boston.
Sargent, Andrew Robeson, Brookline.
Sargent, Charles S., Brookline.
Sargent, Mrs. Charles S., Brookline.
Sargent, Charles Sprague, Jr., Brookline.
Sargent, Mrs. Francis W., Wellesley.
Sawtelle, Eli A., Amherst, N. H.
Sawyer, Timothy T., Boston.
Scorgie, James C., Cambridge.
Scott, Charles, Newton.
Sears, Miss Clara E., Boston.
Sears, Miss Emily E., Boston.
Sears, Dr. Henry F., Boston.
Sears, J. Montgomery, Boston.
Sears, Mrs. J. Montgomery, Boston.
Shaler, Nathaniel S., Cambridge.
Sharp, Miss Helen, Boston.
Shaw, Christopher C., Milford, N. H.
Shaw, Francis, Wayland.
Shaw, Mrs. Robert G., Wellesley.
Shorey, John L., Lynn.
Shuman, Hon. A., Roxbury.
Shurtleff, Josiah B., Jr., Revere.
Sias, Charles D., Wenham.
Siebrecht, H. A., New Rochelle, N. Y.

Simpkins, Miss Mabel, Yarmouth.
Skinner, Francis, Boston.
Skinner, Francis, Jr., Dedham.
Sleeper, Henry Davis, Boston.
Smiley, Daniel, Lake Mohonk, N. Y.
Smith, Archibald, West Somerville.
Smith, Calvin W., Wellesley Hills.
Smith, Charles H., Newton Highlands.
Smith, Charles S., Lincoln.
Smith, Edward N., San Francisco, Cal.
Smith, Thomas Page, Waltham.
Snow, Eugene A., Melrose.
Sohier, Col. William D., Beverly.
Souther, Charles H., Jamaica Plain.
Spaulding, Edward, West Newton.
Spooner, William H., Jamaica Plain.
Sprague, Isaac, Wellesley Hills.
Springall, George, Malden.
Stearns, Charles H., Brookline.
Stearns, Frank W., Newton.
Stedman, Henry R., M. D., Roslindale.
Stevens, Hon. Moses T., Andover.
Stewart, William J., Winchester.
Stone, Charles A., Newton.
Stone, Charles W., Boston.
Stone, Prof. George E., Amherst.
Stone, George F., Chestnut Hill.
Strong, William C., Waban.
Sturgis, Richard Clipston, Boston.
Swain, Charles E., Roxbury.
Sweet, Everell F., Malden.
Sylvester, Edmund Q., Hanover.

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Taylor, Horace B., Portland, Me.
Temple, Felker L., Boston.
Tenney, C. H., Methuen.
Thatcher, William, Brookline.
Thayer, Mrs. Alice R., Boston.
Thayer, Bayard, South Lancaster.
Thayer, Mrs. Bayard, South Lancaster.
Thayer, Eugene V. R., South Lancaster.
Thayer, Mrs. Eugene V. R., South Lancaster.
Thayer, Henry J., Boston.
Thayer, John E., South Lancaster.
Thayer, Mrs. John E., South Lancaster.
Thayer, Nathaniel, Lancaster.
Thayer, Mrs. Nathaniel, Lancaster.
Thayer, S. V. R., Boston.
Thiemann, Hermann, Owasso, Mich.
Thomas, W. B., Manchester.
Thurlow, Thomas C., West Newbury.
Tilton, Stephen W., Allston.
Tolman, Benjamin, Concord.
Tolman, Miss Harriet S., Boston.
Toppan, Roland W., Malden.
Torrey, Elbridge, Dorchester.
Torrey, Everett, Charlestown.
Tower, Miss Ellen May, Lexington.
Tower, Mrs. Helen M., Cambridge.
Travis, Charles B., Brighton.
Trepess, Samuel J., Glencove, L. I., N. Y.
Tucker, Lawrence, Boston.

Underwood, Loring, Belmont.

Vander-Woerd, Charles, Waltham.
Vaughan, William Warren, Boston.
Vinal, Miss Mary L., Somerville.
Vining, R. William E., Hingham.

Wakefield, E. H., Cambridge.
Walcott, Henry P., M. D., Cambridge.
Waldo, C. Sidney, Jamaica Plain.
Wales, George O., Braintree.
Walsh, Michael H., Woods Hole.
Waltham, George C., Dorchester.
Walton, Daniel G., Wakefield.
Warburton, Chatterton, Fall River.
Ward, Francis Jackson, Roxbury.
Ward, John, Newton Centre.
Ware, Benjamin P., Clifton.
Ware, Miss Mary L., Boston.
Warren, Samuel D., Dedham.
Washburn, Andrew, Hyde Park.
Watson, Benjamin M., Jamaica Plain.
Watson, Thomas A., East Braintree.
Watts, Isaac, Waverley.
Webster, Hollis, Cambridge.
Welch, David, Dorchester.
Welch, Edward J., Dorchester.
Weld, Christopher Minot, Readville.
Weld, George W., Boston.
Weld, Richard H., Boston.
Weld, Gen. Stephen M., Dedham.
West, Mrs. Maria L., Neponset.
Wheeler, Frank, Concord.
Wheeler, James, Brookline.
Wheeler, Wilfrid, Concord.
Wheelwright, A. C., Brookline.
Wheelwright, Edmund M., Boston.
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White, Francis A., Brookline.
White, George R., Boston.
White, Joseph H., Brookline.
Whitney, Arthur E., Winchester.
Whitney, Ellerton P., Milton.
Whitney, Henry M., Cohasset.
Whittier, George E., Groton.
Whittier, William Benjamin, South Framingham.
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Wilbur, George B., Woods Hole.
Wilder, Edward Baker, Dorchester.
Wilder, Henry A., Malden.
Willard, E. W., Newport, R. I.
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Williams, Miss Adelia Coffin, Roxbury.
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Williams, Henry Bigelow, Boston.
Williams, John Davis, Boston.
Williams, Philander, Taunton.
Wilson, Col. Henry W., Boston.
Wilson, William Power, Boston.
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Wood, William K., West Newton.
Wright, George C., West Acton.
Wright, John G., Brookline.
Wyman, Oliver B., Shrewsbury.
Wyman, Windsor H., North Abington.

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Atkinson, Edward, Brookline.
Ayres, Miss Helen F., Medford.

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Barr, John, Wellesley.
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Bigelow, Mrs. Nancy J., Southborough.
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Blomberg, Carl, North Easton.
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Chandler, Alfred D., Brookline.
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Clark, John W., North Hadley.
Clark, Joseph, Manchester.
Clark, Theodore M., Newtonville.
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Curtis, Louville, Tyngsborough.

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Fitzgerald, Desmond, Brookline.
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Garthley, James, Fairhaven.
Gill, Mrs. E. M., Medford.
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Grey, Robert Melrose, Belmont, Cuba.
Grey, Thomas J., Chelsea.

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Harrison, C. S., York, Nebraska.
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Hawes, Cyrus Alger, Brookline.
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Hill, J. Willard, Belmont.
Hollis, George, South Weymouth.
Houghton, George S., West Newton.
Hovey, Charles L., Waban.
Howden, Thomas, Whitinsville.
Hubbard, Allen, Newton Centre.
Hubbard, F. Tracy, Cambridge.
Huston, Miss Katharine W., Jamaica Plain.

Illenberger, Henry, Lake Geneva, Wisconsin.

James, Robert Kent, Newton Centre.
Jameson, G. W., East Lexington.
Johnston, Robert, Lexington.

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Kennard, Frederic H., Brookline.
Kimball, Richard D., Waban.
Knott, N. W. T., Waban.

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Leuthy, A., Roslindale.
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Lomax, George H., Somerville.
Loring, Mrs. Thacher, Brookline.
Loring, William C., Beverly.
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Lumsden, David, Roslindale.

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MacMulkin, Edward, Boston.
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Moody, Abner J., Lexington.
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Moseley, Frederick C., Dorchester.
Moseley, Frederick Strong, Newburyport.
Munson, Prof. W. M., Orono, Me.

Newton, John F., Roxbury.
Nicholson, William, Framingham.
Nicol, James, Quincy.
Nixon, J. Arthur, Taunton.
Norton, Michael H., Boston.
Norton, Patrick, Dorchester.

Oakes, F. L., Newton.

Parker, John, Newtonville.
Parker, Walter S., Reading.
Pettigrew, John A., Jamaica Plain.
Pierce, Mrs. F. A., Brookline.
Pray, James Sturgis, Cambridge.
Pritchard, John, Madbury, N. H.
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Rea, Frederic J., Norwood.
Rich, Miss Ruth G., Dorchester.
Rich, William E. C., Roxbury.
Richards, Mrs. P. D., West Medford.
Robb, Peter B., Whitinsville.
Robinson, Walter A., Arlington.
Ross, Charles W., Newtonville.
Ross, Henry Wilson, Newtonville.
Ross, Walter D., Worcester.

Sander, Charles, Brookline.
Saunders, Miss Mary T., Salem.
Scott, Augustus E., Lexington.
Scudder, Samuel H., Cambridge.
Searles, E. F., Methuen.
Seaver, Edwin P., Waban.
Sedgwick, Mrs. Ellery, New York, N. Y.
Sharkey, John F., Cambridge.
Sharples, Stephen P., Cambridge.
Shaw, Hon. Edward P., Newburyport.
Shea, James B., Jamaica Plain.
Stevens, Mrs. Mary L., Brookline.
Stone, Joshua C., Watertown.
Strange, David T., Stoneham.
Sullivan, Michael, Revere.
Sutherland, George A., Roslindale.
Swan, Charles W., M. D., Brookline.
Symmes, Samuel S., Winchester.

Tailby, Joseph, Wellesley.
Teele, William H., West Acton.
Thorpe, Joseph, Taunton.
Tyler, Mrs. John F., North Andover.
Tyndale, Theodore H., Weymouth.

Vaughan, J. C., Chicago, Ill.

Ware, Horace E., Milton.
Warren, Samuel H., Weston.
Waugh, Prof. F. A., Amherst.
Welch, Patrick, Dorchester.
Westwood, Thomas H., Jamaica Plain.
Wheeler, Ezra H., Dorchester.
Wheeler, Henry A., Newtonville.
Wheelwright, George William, Jamaica Plain.
Wilde, Mrs. Albion D., West Roxbury.
Wilder, Miss Grace S., Dorchester.
Wilder, Miss Jemima R., Dorchester.
Wilkie, Edward A., Newtonville.
Winter, William C., Mansfield.
Wood, Mrs. Anna D., West Newton.
Wood, Elijah A., West Newton.
Wood, E. W., West Newton.

Young, E. Bentley, Boston.

Zirngiebel, Denys, Needham.

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